



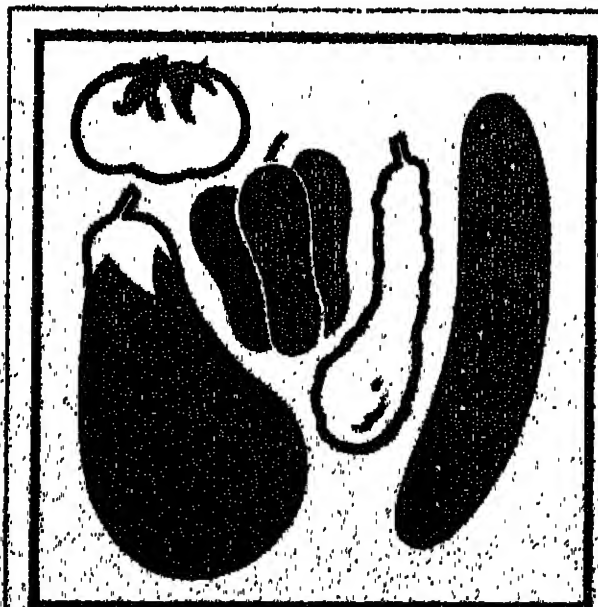
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FAS M-297

# Preview of Mexico's Vegetable Production for Export

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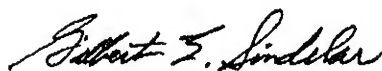


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## FOREWORD

Mexico's vegetable industry has expanded dramatically in the last decade, with about a fourth of total output destined for export. Production in Mexico is of significant importance in the marketing of U.S. vegetables, particularly in the winter when U.S. output is at a seasonal low point.

This report describes Mexico's winter vegetable industry, and the factors underlying its impact on the U.S. vegetable industry. The author is indebted to the staff of the U.S. Agricultural Counselor's Office in Mexico City for the information and assistance they provided. Special appreciation is extended to Henry O. Wagley, former Assistant U.S. Agricultural Attaché in Mexico City; David I. Rosenbloom, Assistant U.S. Agricultural Attaché in Mexico City; and James H. Baldas, District Director, Animal and Plant Health Inspection Service, Plant Protection and Quarantine, Tijuana, Mexico, for accompanying the author on his field surveys and providing information for this report.



Gilbert E. Sindelar

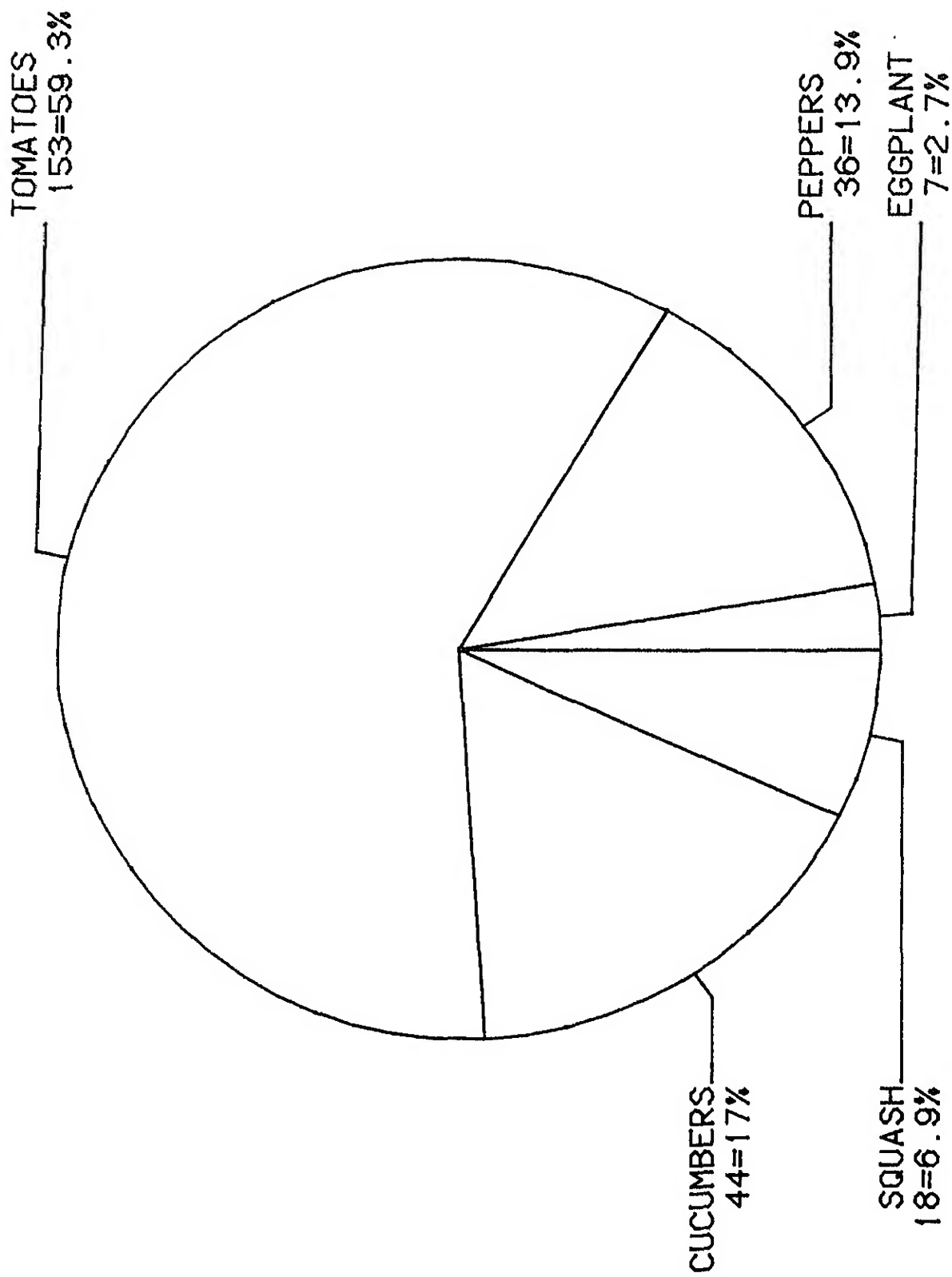
Director

Horticultural and Tropical Products Division

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U.S. IMPORTS OF SELECTED MEXICAN VEGETABLES, 1978/79  
MILLION U.S. DOLLARS





# MEXICO'S VEGETABLE PRODUCTION FOR EXPORT

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## SUMMARY

The past decade has been one of rapid change in Mexico. Extraordinary oil and natural gas reserves were discovered, water resources and electrical power developed, and the national highways improved. This advancement had a positive impact upon, and provided a broader base for, the growth of the vegetable industry.

Mexico's horticultural production has risen steadily since World War II and a large share of the additional output has been exported to the United States. Dramatic production gains came from newly irrigated areas, particularly in the Pacific Northwest. In the States of Sinaloa, Sonora, and Baja California, traditional vegetable production for export diversified from an almost complete reliance on tomatoes toward increased exports of cucumbers, green peppers, eggplant, squash, and other crops.

Mexico's population growth, one of the highest in the world—plus rising income levels—has also fostered increased domestic consumption of vegetables. Mexico's Pacific Northwest vegetable areas were developed almost entirely for the export market, but now a rising share—about half—of the three States' total output is destined for internal consumption.

Population growth, coupled with a slowdown in the rate of total agricultural growth, has also led to unprecedented imports of grains and oilseeds. In

response to production shortfalls of these and other crops, Mexican policymakers have continually raised crop support prices. As a result, the competitive position of grains, oilseeds, sugarcane, and cotton—crops that compete with vegetables—has improved more than that of horticultural crops.

Despite the rapid growth in the domestic market and the competition from other crops, Mexico's vegetable producers have increased output sufficiently to expand exports. In the early 1960's, growers received large infusions of capital and expertise from the United States, which resulted in higher yields and better quality produce. During the late 1960's, these farmers became more financially independent, and organized powerful producer organizations in order to improve their marketing arrangements. In the 1970's, the industry expanded dramatically and exports increased twofold in quantity and threefold in dollar value.

Although there is adequate land for additional vegetable output, most of the increase in production has come from higher yields of export-quality produce. Despite the rising prices of competing crops, vegetable farming is still one of the most lucrative farming activities in Mexico, because of improved farm productivity and excellent financial returns from vegetable exports.

## BACKGROUND ON MEXICO

### People

Population: 66.9 million, in 1978.

Urban population—60%, rural—40%, (of which farm—20%).

Ethnic groups: Indian-Spanish (Mestizo)—60%; American Indian—30%; Caucasian—9%.

Mexico City's population: 13 million (including Federal District, D.F.)—World's largest city.

Education: 9 years compulsory; percentage attendance—65%, literacy rate—75%.

### Economy

Gross domestic product (GDP): \$74.3 billion in 1977.

Inflation rate: 17% in 1978, 18% in 1977, and 29% in 1976.

Unemployment rate: 19% in 1978, 20% in 1977, and 25% in 1976.

Employment: 20 million, with 800,000 job market entrants annually.

Exports: \$5.8 billion (f.o.b.) 1978, to U.S. \$3.4 billion; agricultural \$1.0 billion.

Imports: \$7.2 billion (c.i.f.) 1978, from U.S. \$4.5 billion; agricultural \$900 million.

### Agriculture

Total land area: 197 million hectares.

Woods and forests: 37%, or 73 million hectares.

Pasture: 35%, or 68 million hectares.

Mountains and deserts: 14%, or 28 million hectares.

Crop area: 14%, or 28 million hectares.

Irrigated area: 3%, or 5 million hectares.

Leading crops, by area (in thousand hectares), for 1978: Corn (8,100), beans, dry (2,000), sorghum (1,100), wheat (850), sugar cane (445), safflower (370), cotton (354), coffee (320), barley (240), and sesame seed (240).

Leading fruits and vegetables, by area (in thousand hectares), for 1978: oranges (168), tomatoes (71), potatoes (58), peppers (54), bananas (50), limes (44), grapes (40), watermelons (24), cantalopes (23), and onions (20).

U.S. Mexico Agricultural Trade in Selected Products, 1976/77-1978/79

(1,000 dol.)

Item	October-September		
	1976/77	1977/78	1978/79
<u>U.S. Agricultural Imports from Mexico</u>			
Coffee . . . . .	389	244	379
Tomatoes . . . . .	147	163	155
Live cattle . . . . .	72	99	101
Cucumbers . . . . .	15	34	46
Strawberries, fresh and frozen . . . . .	27	26	40
Peppers . . . . .	20	30	37
Beef and veal . . . . .	37	49	26
Cantalopes . . . . .	20	21	22
Squash . . . . .	4	16	19
Onions . . . . .	7	13	17
Pineapple . . . . .	7	12	14
Watermelon . . . . .	8	8	11
Lime oil . . . . .	7	9	7
Orange juice . . . . .	6	9	7
Tomato paste . . . . .	7	8	6
Beans, snap . . . . .	2	7	9
Oranges, fresh . . . . .	10	6	9
Eggplant . . . . .	3	6	7
Garlic . . . . .	4	6	10
Asparagus . . . . .	3	4	4
Grapes . . . . .	2	2	2
Total U.S. imports of Mexico's fresh vegetables . . . . .	218	293	321
Total U.S. imports of Mexico's fruits and vegetables . . . . .	361	450	519
Total U.S. agricultural imports from Mexico . . . . .	1,014,462	999,424	1,241,522
<u>U.S. Agricultural Exports to Mexico</u>			
Feed grains . . . . .	221	249	393
Soybeans . . . . .	110	145	156
Cattle hides . . . . .	29	44	85
Soybean oilcake and meal . . . . .	57	22	26
Live cattle . . . . .	15	19	19
Soybean oil . . . . .	10	18	3
Total U.S. agricultural exports to Mexico . . . . .	608,397	735,429	972,037

Source: Bureau of Census U.S. Dept. of Commerce.

## INTRODUCTION

Approximately a quarter of Mexico's output of fresh vegetables is for export. Since the United States is by far the largest export market for Mexican vegetables, production in that country is of significant importance in the marketing of U.S. vegetables, particularly in the winter when U.S. output is at a seasonal low point.

Mexico's prominence in the U.S. horticultural market from late fall through early spring (November-May) is already well established. Because of the similarity in the marketing seasons, Mexico competes more directly with Florida than with any other U.S. State. The five key vegetables exported to the United States are fresh tomatoes, green peppers, cucumbers, eggplant, and squash. All five were the subject of the 1978-80 U.S. dumping investigation.

Mexico's share of the U.S. vegetable market is especially pronounced during the winter months of January through March. During the last five winter seasons, Mexico accounted for 60 percent of all the tomatoes marketed in the United States, 80 percent of the cucumbers, 70 percent of the eggplant, and 50 percent of the sweet peppers and squash.

Although Mexico has exported substantial quantities of tomatoes to the United States on a regular basis since World War I, shipments did not start to soar until after World War II. Mexico's inroads into the U.S. vegetable market were a consequence of several underlying factors:

- The investment of substantial amounts of U.S. capital and expertise in the horticultural production areas of the northwestern States of Sinaloa and Sonora during the late 1940's and 1950's,

- The cessation of U.S. trade with Cuba in 1962, which enabled Mexico to replace Cuban vegetable exports to the United States. Cuba had enjoyed a lower U.S. tariff rate and was especially competitive in the U.S. winter tomato and cucumber markets.

- Termination of the U.S. Bracero Program—which permitted large-scale use of imported labor in the United States—on December 31, 1964. This marked a decisive turning point in Mexican vegetable exports to the United States. There was an almost immediate influx of American capital and know-how into Mexico. Technicians and fieldmen were brought in to train Mexican growers in the use of proper cultural techniques, and seeds and plants were imported from the United States. Experimental plots and continual testing of the adaptation of U.S. plant varieties to local conditions became an important part of the growing operations. Technicians from U.S. packing equipment manufacturers also contributed much toward advancing the adoption of more efficient and better quality packing operations.

- The floating, or *de facto*, devaluation of the peso on August 31, 1976, was the last important factor assisting Mexican exports. Soon thereafter, the peso dropped to just about half its former U.S. dollar value, making Mexican exports very competitive price in the U.S. market. Although inflation has offset much of the cost advantage resulting from the devaluation, an abundance of low-cost labor, land, and a favorable climate should enable Mexican produce to be competitively priced in the U.S. market for a number of years.

## GEOGRAPHY AND CLIMATE

Vegetables are grown throughout Mexico; however, most vegetables for export are produced in the North because of lower transportation costs to the United States. The hot and dry, desert climate of northwestern Mexico favors horticultural production in the fall, winter, and spring seasons (October-June).<sup>1</sup> Vegetables are grown primarily in the northwest rather than in the northeast where frequent

rainfall and high humidity cause disease problems.<sup>2</sup>

Production is centered in the fertile coastal valleys, only a few meters above sea-level, in the northwestern States of Sinaloa, Sonora, and Baja California. In this northwestern region, the areas devoted to vegetables account for only about 5 percent of total farm acreage and are widely scattered among fields of grain, oilseeds, sugar cane, cotton, and dry beans.

<sup>1</sup>Note: All units are metric, unless indicated otherwise.

<sup>2</sup>However, Baja California has winter rains (the opposite of Sinaloa's and Sonora's summer rains) and has an April-through-November tomato season.

<sup>2</sup>Winter vegetables were intensively cultivated in the Monte-Tampico area of the States of Nuevo Leon, Tamaulipas, and Veracruz during 1955-65.

In Sinaloa—Mexico's leading agricultural State—vegetables are intensively produced in the river valleys in Culiacán, Los Mochis, and in several smaller irrigated areas. Sonora was once a leading area for vegetable exports, but because of occasional mid-winter freezes, most vegetable operations moved south to Sinaloa. Nevertheless, in the fall (October-December) and spring (April-June), there is still substantial vegetable production in the Guaymas and Huatabampo valleys of southern Sonora. Baja California has recently become an important tomato area, with production for export centered in the northern coastal valleys of San Quintín, Camalú, and Colonia Guerrero (collectively known as the San Quintín region) and to a lesser extent, in the Southern Baja Valley of Santo Domingo.

## Sinaloa and Sonora

Vegetables for export are produced in the coastal river valleys extending from the river Baluarte in southern Sinaloa to the Guaymas in southern Sonora.<sup>3</sup> Nevertheless, the leading vegetable area is the Culiacán Valley of central Sinaloa. It is the largest frost-free valley with extensive irrigation facilities relatively close to the U.S. border.<sup>4</sup>

These coastal valleys are usually only a few meters above sea level and may extend 200 kilometers (120 miles) inland from the Gulf of California (or Sea of Cortéz). These valleys follow the westward course of the numerous rivers that flow from the nearby Sierra Madre Occidental Mountains.

Lowland soils are generally of a heavy clay loam that requires large tractors for deep plowing and heavy applications of fertilizer for high yields. Because of the subtropical climate, frequent use of pesticides and soil fumigation is necessary; crop rotation is also widely practiced.

Important weather factors include occasional heavy rainfall during the otherwise dry growing season, an extremely hot and rainy season in the summer, and midwinter freezes in the northern areas. Although rainfall comes primarily during the summer, a heavy winter downpour (as occurred in December 1978) may ruin a crop by cracking fruit and provoking pest and disease problems. Occasional cool, cloudy weather causes bloom drop and production decreases sharply, as occurred in January 1974.

<sup>3</sup> In central Sonora, around Hermosillo, there are some minor areas of squash and peppers, which are slightly more resistant to cold temperatures than tomatoes, cucumbers, and eggplant.

<sup>4</sup> Culiacán, the capital of the State of Sinaloa, is a city of 350,000 people on the mainland coast of the Gulf of California. Culiacán was founded in 1531 by Spanish conquistadores on the banks of the Culiacán River. Today, Culiacán has a predominantly agriculture-based economy that services the whole State of Sinaloa.

Culiacán has extremely hot summers—with temperatures over 38°C (100°F)—and most plantings must wait until late September or October to avoid sunburn. The annual rainfall averages about 700 millimeters (28 inches). Evening rains are normal during July-September and immediately lower temperatures about 15°C (25°F) so that nighttime temperatures average 24°C (75°F). Many competing and complementary crops, such as dry beans, grains, cotton, and sugarcane, can withstand the extreme summer temperatures better than vegetables.

During Culiacán's vegetable growing season, temperatures range from an average daily high of 33°C (91°F) to a low of 12°C (54°F) (see Table 1.). Further north in Guasave, Los Mochis, Huatabampo, and Guaymas, temperatures average 5°-10°C lower, with occasional freezes in January and early February. However, in late February and March, growers in these northern areas plant a spring vegetable crop that is harvested from April through June.

Along the coast of Sinaloa and Sonora, annual rainfall becomes progressively less from south to north as the subtropical vegetation of southern Sinaloa gives way to the Sonoran desert. For example, average annual rainfall in Guaymas, Sonora—which is 500 kilometers (300 miles) to the north of Culiacán—is only 300 millimeters (12 inches). Although there is less irrigation water in the north than in the south, the cooler summer temperatures permit summer plantings for a fall harvest.

During the midwinter, Mexico's vegetable exports originate from central Sinaloa, principally from Culiacán. In the spring, harvesting moves north to Los Mochis, Guaymas, and other areas, where some minor production also occurs in the fall.

## Baja California

Baja's farming areas are separated by the central mountains, which extend the length of the peninsula (1,500 kilometers, or 800 miles) and create numerous coastal valleys. Although sweet and hot peppers are grown in Baja, tomatoes are the only important vegetable exported from Baja. The three leading farming regions are:

- Mexicali, located in northeastern Baja California, bordering California's Imperial Valley and Arizona's Yuma Valley.

- San Quintín (Northern Baja Calif.), on the Pacific coast, 250 kilometers (150 miles) south of the U.S. border. This is the main tomato area of Baja.

- Santo Domingo (Southern Baja Calif.) also on the west coast, 1,000 kilometers (600 miles) south of the border.

Table 1.—Weather Conditions in Culiacán, Sinaloa,<sup>1</sup> 1941-70

Items/Parameters	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
<b>TEMPERATURES</b>													
Maximum extreme	35.8	37.3	37.9	41.1	41.4	41.2	41.7	40.4	40.7	39.4	39.2	38.4	41.7
Date (day/year)	25/46	17/48	27/53	05/48	14/58	21/65	03/69	01/42	19/60	—	12/67	—	03/07/69
Ave. maximum	28.2	29.5	31.1	33.6	35.5	36.1	35.8	35.1	34.8	34.4	32.2	29.0	32.9
Dry bulb (atmosphere)	19.6	20.5	21.7	24.5	27.3	29.5	29.4	28.9	28.7	27.4	23.7	20.6	25.1
Average minimum	12.3	12.5	13.1	15.7	19.1	23.7	24.3	23.8	23.8	21.3	16.2	13.5	18.2
Minimum extreme	3.8	1.6	5.5	8.8	12.6	15.8	20.0	19.0	19.0	14.1	6.6	3.8	1.6
Date (day/year)	—	04/56	24/52	—	01/70	05/53	—	13/65	—	31/69	23/57	24/53	04/02/56
Minimum in rough weather	0.7	0.0	3.5	7.5	9.7	13.7	18.5	17.0	17.0	10.1	4.1	1.6	0.0
Date (day/year)	18/49	04/56	24/52	12/45	01/70	05/53	18/64	13/65	28/70	01/68	27/66	24/53	04/02/56
Oscillation	15.9	17.0	18.0	17.9	16.4	12.4	11.5	11.3	11.0	13.1	16.0	15.5	14.7
<b>HUMIDITY</b>													
Average relative humidity	15.8	15.9	16.3	18.2	20.7	24.0	25.5	25.7	25.7	23.7	19.2	16.8	20.6
Total evaporation	71	65	61	57	57	64	74	79	79	74	68	71	68
Average vapor tension	112.5	135.1	193.9	229.0	269.8	247.1	195.9	169.6	156.3	165.4	140.8	113.8	2129.2
<b>PRECIPITATION</b>													
Average monthly total	24.9	8.6	7.0	2.8	0.4	25.0	163.7	228.8	146.5	41.2	11.2	38.9	699.0
Maximum in a month	132.2	82.8	71.0	33.3	5.3	124.0	375.0	600.5	349.8	130.9	125.4	241.8	600.5
Date (year)	60	68	58	59	43	58	70	66	43	48	44	63	08/66
Maximum in 24 hours	41.2	46.6	53.5	31.3	5.3	63.0	109.0	171.8	141.5	114.1	50.8	145.0	171.8
Date (day/year)	11/60	10/68	06/58	14/59	01/43	30/59	19/70	29/44	17/53	08/45	23/44	10/63	29/08/44
Minimum	0.5	0.8	0.8	1.3	4.0	0.8	69.7	109.2	31.0	2.1	1.0	0.5	0.5
Date (year)	48	53	45	42	56	61	44	41	52	68	41	62	—
Total hours of sunshine	189.5	186.7	230.0	211.8	246.6	221.0	191.6	198.2	195.4	228.4	213.2	183.6	2496.0
<b>Average number of days with</b>													
Appreciable rainfall	2.96	0.96	0.76	0.36	0.10	2.56	13.86	15.16	9.80	3.34	1.10	2.66	53.62
Inappreciable rainfall	2.13	1.63	1.33	0.76	0.90	4.73	8.13	6.43	5.40	2.41	1.60	2.90	38.35
Clear skies	13.56	12.46	15.86	15.00	20.31	14.46	1.86	2.89	8.06	19.23	16.83	13.26	153.78
Partly cloudy	8.80	8.63	10.20	10.46	7.72	11.00	15.83	16.86	12.53	7.90	8.70	9.43	128.06
Overcast	8.63	7.13	4.93	4.53	2.96	4.53	13.30	11.24	9.40	3.86	4.46	8.30	83.27
Dew	19.75	15.68	15.13	8.03	4.93	0.82	0.33	1.96	5.63	17.70	18.00	18.40	126.36
Hail	0.00	0.00	0.03	0.00	0.00	0.03	0.10	0.00	0.03	0.00	0.00	0.00	0.19
Freeze	0.16	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.32
Lightning	0.03	0.00	0.00	0.03	0.00	0.34	1.70	1.65	0.83	0.06	0.00	0.03	4.67
Fogs, mist	1.55	1.10	0.93	1.20	1.46	0.03	0.46	0.06	1.03	1.30	0.66	1.93	11.71
Snow	0.63	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33

Latitude (N) 24-49; longitude (W) 107-24; altitude; 84 meters above sea level. —Denotes not available.

Source: Dirección General de Geografía y Meteorología, Secretaría de Agricultura y Ganadería

April 1980

Commodity Programs, FAS, USDA

Mexicali is not suited to tender vegetable<sup>5</sup> production (although asparagus, onions, and garlic are grown there) because of its extremes in heat and cold. Winter vegetables are grown farther south—in San Quintín and Santo Domingo—where the nearby Pacific Ocean moderates the temperature range during the dry season (April-December).

Most of the Baja Peninsula's winter tomato exports are from northern Baja California in the San Quintín region, since that area enjoys a competitive advantage over Santo Domingo in distance and transportation cost to the U.S. border. The San Quintín region is divided by coastal mountains into three separate zones: The San Quintín Valley proper,

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<sup>5</sup>Tender vegetables (such as tomatoes, peppers, cucumbers, eggplant, and squash) are extremely sensitive to cold temperatures, but they are not called winter vegetables in Baja because they are not produced there in the winter (when it rains in Baja).

the Camalú Valley, and Colonia Guerrero. In addition, there are many lesser areas in northern Baja both north and south of the San Quintín region.

In Southern Baja California (often called the territory of Southern Baja California because it is not a State), most of the tomatoes are produced in the Santo Domingo Valley. Because of higher transportation cost, Santo Domingo's tomatoes are only exported to the United States when U.S. prices are high. However, tomatoes may be exported both earlier and later than shipments from San Quintín because of the shorter winter season and warmer temperatures of Southern Baja.

The west coast of the Baja Peninsula receives 100-200 millimeters (5 to 10 inches) of rainfall, primarily during December to March. Temperatures average 10 to 20°C (50°F to 68°F) with occasional freezes in midwinter. Throughout the year, the nearby Pacific Ocean moderates coastal temperatures, with frequent mist and ocean fog conditions.

## IRRIGATION

All vegetables are grown under irrigation. Most farms use furrow (or ditch) irrigation; however, in the north some growers are using drip irrigation because water is scarce. In Sinaloa and southern Sonora, most of the water comes from recently constructed reservoirs. In Baja California and northern Sonora water is usually from deep wells.

Currently, Sinaloa has 573,000 hectares of irrigated farmland. Sonora and Baja have 540,000 and 200,000 hectares, respectively, of irrigated areas. Baja and Sonora are already using almost all of their water resources, but Sinaloa is dramatically expanding its irrigated area.

Sinaloa has 355,000 hectares of irrigation area under construction and an additional 85,000 hectares are planned. This expansion would boost Sinaloa's total irrigated farmland to 1,013,000 hectares—the largest of any State in Mexico. Added to the dry farming area of 250,000 hectares and marginal farmland of 285,000, Sinaloa's total agricultural area will be 1,550,000 hectares (see table 2.).

Although Culiacán is Sinaloa's leading vegetable area, the State's largest irrigation district is around the City of Los Mochis (National Water District No. 75 (and 75A)), in the valley of the River Fuerte. This district has 223,500 hectares in the Fuerte Sur Valley (Zone 75) and 41,600 hectares in the adjacent Carrizo Valley (Zone 75A). Fuerte Sur is irrigated from the Miguel Hidalgo reservoir, which has a capacity of 3,350 million cubic meters, filled by the Fuerte River; the Carrizo Valley is irrigated from the J. Ortiz Domingo reservoir with a capacity of 600 million cubic meters, filled by the Alamos River. Another reservoir, Huites, is under construction and

is expected to store sufficient water to irrigate an additional 100,000 hectares in this district.

The Culiacán Valley (District No. 10 (and 10A)) has 217,500 hectares irrigated both from the A. López Mateos and Sanalona reservoirs of the Humaya and Tamazula Rivers, respectively. The Humaya and Tamazula Rivers join at the City of Culiacán and form the Culiacán River, from which much of the irrigation water is drawn. The A. López Mateos reservoir has a capacity of 4,064 million cubic meters and the Sanalona may store up to 845 million cubic meters.

The San Lorenzo River Valley (District No. 10B) is about 50 miles south of Culiacán and has 18,000 hectares of irrigation area. A reservoir, the Comedero, is being built to store enough water from the San Lorenzo River to irrigate 99,000 hectares.

Guasave has an irrigation area of 34,700 hectares (District No. 63), watered directly from the Sinaloa Poniente River. The Bacurato Reservoir is under construction and is expected to hold sufficient water to irrigate 110,000 hectares.

The Mocorito River Valley (District No. 74) contains 20,300 hectares of area irrigated by the Guamúchil reservoir, which has a capacity of 343 million cubic meters. The Estaquio Buelna reservoir is under construction and should store enough water to irrigate 47,000 hectares from the Mocorito River.

The valley of San Elota has 20,000 hectares under irrigation from the Piaxtla Verde and San Elota rivers. The Piaxtla-Elota and the Isla Palmito de Verde reservoirs are planned to be built to store sufficient water to irrigate 45,000 and 40,000 hectares, respectively.





Table 2.-Sinaloa State: Actual and Potential Irrigation Areas, by River and Reservoirs, 1980

Agricultural areas		River	Reservoir	Water capacity (Million cubic meters)	Area irrigated (Hectares)
<b>IRRIGATION AREAS</b>					
Culiacán		Humayo Tamazula Culiacán	Sanalona (1948) A. López Mateos (1964) ( <sup>2</sup> )	845 4,064 —	<sup>1</sup> 100,000 117,500 ( <sup>2</sup> )
Los Mochis		Fuerte Alamos <sup>3</sup>	Miguel Hidalgo (1956) J. Ortiz de Domingo (1970) <sup>3</sup>	3,350 600	223,500 41,600
Mocorito		Mocorito	E. Buelna (Guamuchil) (1973)	343	20,300
Guasave		Sinaloa	( <sup>4</sup> )	—	34,700
Other		( <sup>5</sup> )	—	—	35,000
Total				9,202	572,600
<b>RESERVOIRS UNDER CONSTRUCTION</b>					
Guasave		Sinaloa	Bacurato	—	110,000
Los Mochis		Fuerte	Huites	—	100,000
San Lorenzo		San Lorenzo	Comedero	—	98,500
Mocorito		Mocorito	Eustaquio Buelna	—	47,000
<b>RESERVOIRS PLANNED</b>					
San Elota		Piaxtla-Elota	Elota	—	45,000
Mazatlan		Presidio	Palmito de Verde	—	40,000
Total planned and under construction					440,500
<b>OTHER AREAS</b>					
Dryland farm areas					250,800
Marginal farm land					284,900
Total					535,700
GRAND TOTAL					1,548,800

<sup>1</sup> Includes areas irrigated from Tamazula and Culiacán Rivers. <sup>2</sup> Included in Humaya and Tamazula River areas.  
system. <sup>3</sup> Includes San Lorenzo, Presidio, Baluarte, Piaxtla, and Elota Rivers. <sup>4</sup> Sometimes under Valley del Carrizo. <sup>5</sup> Not available.

Source: Secretaría de Agricultura y Recursos Hidráulicos (SARH).

April 1980

Commodity Programs, FAS, USDA

Sinaloa has some small reservoirs in widely scattered locations that irrigate 35,000 hectares. These

smaller reservoir networks also may be enlarged greatly during the 1980's.

## GROWERS

There are three principal types of farmers in Mexico: *Pequeños propietarios* (those who own their land); *Ejidatarios* (those who usually farm government land cooperatively); and tenant farmers (those who rent). While all three groups are involved in vegetable farming, the term *Pequeños propietarios* is too general for discussion purposes and is, therefore, subdivided and discussed as 1) large-land owners and 2) small-land owners (generally referred to as *campesinos*).

Large-scale producers, with farms of 300 to 1,500 hectares and several packinghouses, control roughly half of the vegetable export market. Small-land owners operate farms of roughly 5-100 hectares<sup>6</sup>, and generally combine into cooperative units for production and marketing activities. *Ejidos* are a type of cooperative, generally comprising 5 to 10 families (called *Ejidatarios*) and farm 10-30 hectares of land donated by the national government. The land, which can be as much as 100 hectares, may be passed on by the workers to their descendants but title to the land remains with the government. *Ejidos* also receive preferential tax and credit treatment from the national government. Tenant farmers rent small parcels of land, generally from large farmers (who also rent land for crop rotation reasons), and often form partnerships with other growers.

Grower organizations were formed in the 1950's and 1960's and have played a major role in the economic and political advances of Mexico's winter vegetable industry. At first, these were only scattered river valley associations in Sinaloa that included all crops, but with special emphasis on vegetables. Later these fragmented groups joined together to form a statewide organization, the *Confederación de Asociaciones Agrícolas del Estado de Sinaloa (CAADES)*.<sup>7</sup>

Subsequently, a national horticultural producers union, the *Unión Nacional de Productores de Hortalizas (UNPH)*, was formed in order to regulate the flow of produce from all States to the export market. The UNPH is an umbrella organization for State and other local producer organizations and represents Mexico's horticultural industry in foreign

and other trade matters. Although the UNPH continues to expand to include more local associations, CAADES is still the most important entity within the UNPH. Most UNPH funds and expertise come from Sinaloa, inasmuch as it is the leading horticultural State. For these reasons, UNPH headquarters (and the CAADES headquarters) are located in the Sinaloa State capital, Culiacán—also known as Mexico's "produce" capital.

The UNPH is composed of 250 local associations with about 18,000 active producers, including 10,700 *ejidatarios*, 6,000 private farmowners (large and small), and 1,100 tenant farmers and partners. Virtually all of Mexico's commercial vegetable farmers belong to this organization. In 1978/79, the UNPH membership farmed 373,000 hectares, and produced 4 million tons of horticultural crops, valued at about 23 billion pesos (US\$1 billion), of which 1 million tons, representing 64,000 hectares and valued at 10 billion pesos (US\$440 million), were exported. UNPH members employed 350,000 laborers, who worked 31 million worker-days and received 4 billion pesos (US\$176 million) in salaries.

## Sinaloa

Although there are about 1,000 small owners, *ejidatarios*, and tenant farmers who produce winter vegetables in Sinaloa, roughly half the State's exports of these products are produced by 10 large farms, each between 300-1,500 hectares in size. These large operations are all based in the Culiacán river valley, but most also have additional landholdings in Los Mochis, Guasave, and other areas.

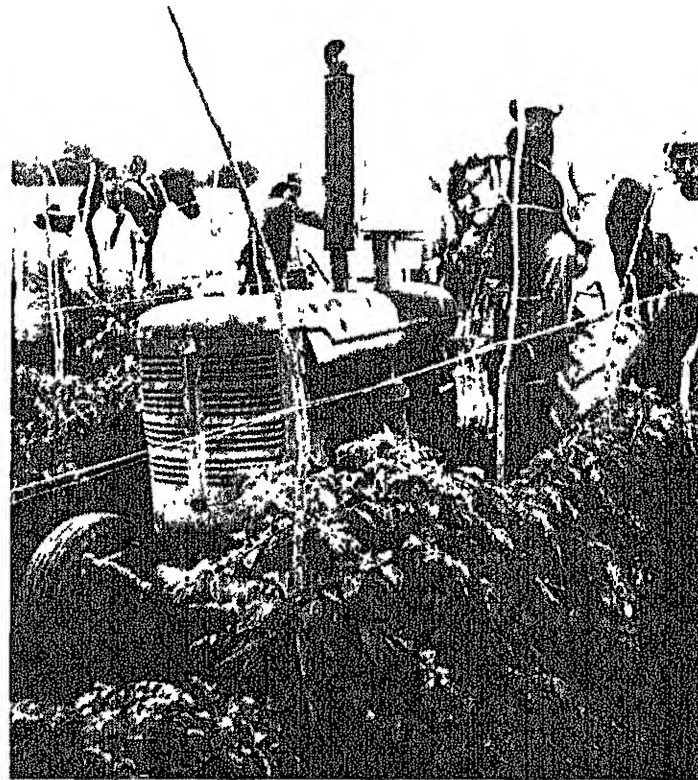
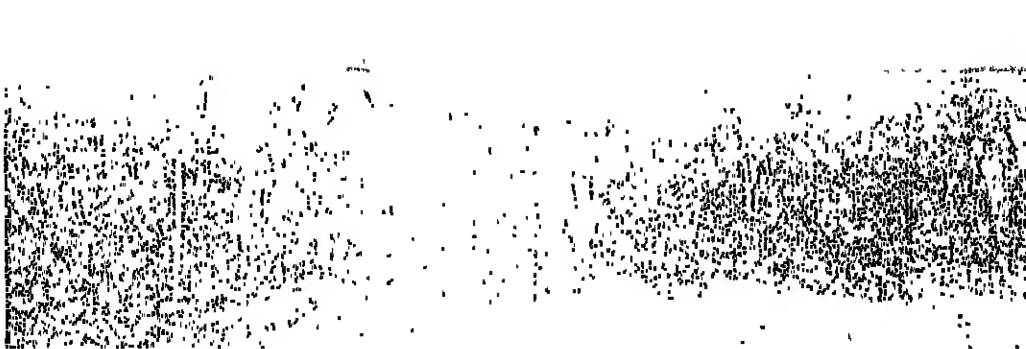
These large farms are generally run by a family that oversees the growing, packing, and marketing operations. Since land reform laws limit produce farms to 100 hectares, several family members hold title to the land, although older males usually control the business.<sup>8</sup> During 1975 and 1976, some farms lost land through expropriation carved out under the National Government's reform legislation (enacted during the revolution of 1910-20).

Most of the large produce farms were started in the 1950's and early 1960's with American technical and financial assistance. These operations expanded dramatically due to additional American investment

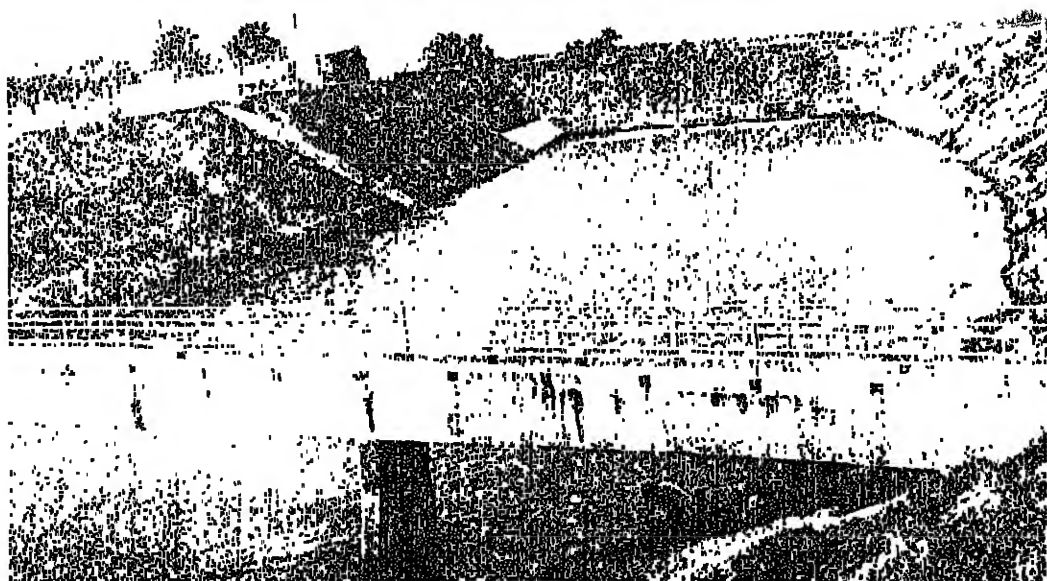
<sup>6</sup>There are a few farms in the intermediate size of 100-300 hectares (including all crops), but they are not very important on a commercial basis for vegetable output (unless they combine into a large marketing cooperative).

<sup>7</sup>Although vegetable growers only account for 10 percent of the 25,000 farmers represented by CAADES, they provide 40 percent of the funding of CAADES.

<sup>8</sup>Sometimes two or more family farms form loose partnerships.



1. Cultivating staked tomatoes in Baja California.
2. Handspraying tomatoes in Culiacán, Sinaloa.
3. Using horse-plows to cultivate in Baja California.
4. Tying young tomato plants to stakes.
5. Using small, older tractors to cultivate between the rows.
6. Costa Rica Canal, in Culiacán.



following the termination of the U.S. Bracero Program in 1964 (the Bracero Program permitted extensive use of Mexican labor on U.S. farms). Recently, however, the use of U.S. capital and expertise for the large farms has greatly diminished because of the increased availability of these inputs within Mexico.

## Sonora

Because of its close proximity to the U.S.-Mexican border, southern Sonora was once a major area for winter vegetable exports to the United States. However, the danger of frost caused a shift southward and now there are only about 100 small farms and a few large farms growing vegetables for export. Many of these former vegetable farms switched to growing wheat, feedgrains, cotton, and other low labor-usage crops, partly because of labor disputes and the threat of land expropriation.

The situation in southern Sonora is very similar to that of Sinaloa, except that the operations are usually smaller and less efficient. Farmers in the river valleys of Rio Maya (around the city of Huatabampo) and Rio Guaymas have producer associations, but these are not as powerful as those in Sinaloa.

## Baja California

The San Quintín region, about 250 kilometers south of the U.S. border, has about 500 growers, whose farms are predominantly 20-30 hectares in size, of which 2-5 hectares are in tomatoes. However, a few 1,000-hectare farms, with 200 to 500 hectares in tomatoes, account for the bulk of the region's tomato crop.

The proportion of small farms—operated by either campesinos or ejiditarios—is far greater than the number of similar farms in Sinaloa. As in Sinaloa and Sonora, small farmers generally combine into cooperatives for production and marketing activities. Despite the tax and credit advantages granted to ejidos and small owners, the most efficient operations are the independent farms of 100 or more hectares that use more advanced technology.

In Santo Domingo, which is about 1,000 kilometers south of the U.S. border, there are about 30 producers—mostly small farms and ejidos. However, it is reported that one or two large operations from Sinaloa have expanded into this area. The tomato industry in Southern Baja California is not as efficient as in San Quintín, primarily because of its isolated position far from supplies and markets.

## PRODUCTION FACILITIES

Land, labor, and capital are, in general, in adequate supply in northwestern Mexico. Although water is critically short in Baja California and Sonora, there are few input constraints in Sinaloa. Therefore, most of the production facilities are located in Sinaloa, where output can readily expand with increased demand from the export and local markets.

There are only a few agricultural research facilities in Northwest Mexico and a great need exists for research into problems facing vegetable growers. Although there are horticultural schools in Sinaloa and Sonora, most growers, managers, and technicians are educated in the United States. The National Government does support Centro de Investigaciones Agrícolas del Pacífico Norte (CIAPAN)—the research organization for Northwest Mexico under the Secretary of Agriculture (SARH)—but CIAPAN research is primarily in the areas of grains, cotton, and staple crops. In an effort to improve vegetable culture research, CAADES growers are taxing themselves to provide funds for research at the 100-hectare research farm in Culiacán. This facility may be expanded.

Although vegetable research facilities in northwestern Mexico are expanding, growers still rely on many U.S. research facilities, particularly in California and Florida. New technology applied in Florida or California is almost immediately adopted by Mexican growers (unless the Mexican Government

blocks importation of the technology).<sup>9</sup> For example, new plant varieties introduced in Florida are often used in the same, or the following, year in Mexico. In the long term, Mexico's research facilities should improve substantially because of continued financial backing by growers and the Government.

## Sinaloa

Sinaloa's State capital, Culiacán, is the center of Mexico's vegetable industry and headquarters for several farm organizations and the offices of the communication and transportation businesses that service the agricultural industry. Sales offices for trucks, tractors, farm equipment, fertilizers, chemicals, and seed suppliers are located in the city's outskirts.

Most of the farm buildings in the countryside of the Culiacán valley are located near large packing-house complexes. Vegetable farms are centered around these packing areas, where the business headquarters, trucks, tractors, trailers, and other

<sup>9</sup>The Mexican Government often restricts imports of materials, particularly labor-saving equipment, from the United States, to protect local industries and reduce unemployment.

machinery and materials are located. Laborers go to these central areas for their daily work assignments. Depending on size, a farm may employ from 20 to 3,500 workers.

There are about 100 vegetable packing plants in Sinaloa, with the majority of them belonging to small land owners and ejidarios. However, the 10 largest businesses have about 25 packinghouses that produce at least half of total vegetable exports.

The larger firms have complex packing operations that may employ from 300 to 500 workers on a packing line at the height of the season, while smaller outfits have older packing facilities that may use 20 to 30 workers. Big farms have an abundant supply of heavy U.S.-made machinery, while small farms usually share, rent, or custom-hire machinery. Although large farms may have ultramodern equipment (such as four-wheel-drive, articulated tractors, laser-guided scrapers to prepare fields for planting, and even their own airplanes for crop spraying), horses and mules are still used to cultivate the narrow rows of trellised vine-like vegetables.

Most packinghouses throughout Sinaloa show signs of new additions. The packing lines often have new washers, sizers, and conveyors, and many large packinghouses have precooling rooms and ethylene gassing facilities similar to those in California and Florida.

The Mexican Government, however, restricts the use of labor saving devices—the unemployment rate is very high in Mexico—and there may be twice as many workers on a packing line as there would be in a U.S. packinghouse. Even though U.S. wages are well above Mexican wages, Mexican growers' labor costs are approaching those of comparable U.S. labor costs, because Mexican growers use more workers.

Worker housing is a problem. However, the Mexican Government, CAADES, and growers are now attempting to improve temporary housing facilities.

About 200,000 migrant workers are employed in Sinaloa at the height of the winter vegetable season. Most of the workers are "imported" from the less developed southern States, particularly Oaxaca. A majority of large farms have recruiting programs for migrant labor, and some even invite and host village officials from Oaxaca before the season starts in order to discuss areas planted, harvesting periods, and the number of laborers needed. After the officials return home, the workers show up on schedule.

The majority of the packing and field laborers are women. As of January 1980, almost all unskilled

laborers earned 165 pesos (US\$7.15) daily, plus bonuses, with supervisors and skilled workers garnering substantially more. Over the entire 6-month season, these 200,000 migrant workers may earn around US\$160 million.

## **Sonora**

There are about 20 vegetable packingsheds in southern Sonora. Most of the packing plants are small owner and ejido operations, although there are still one or two large packinghouses around Guaymas.

Growers in Sonora purchase most farm inputs around Guaymas, Hermosillo, and Nogales; some materials are obtained in Culiacán. Growers rely on the communications and transportation network extending from Nogales, through Guaymas, to Culiacán.

Most large farm vegetable facilities have deteriorated, since the majority of the big vegetable plantations have switched to growing wheat, feed-grains, and cotton. In addition to the danger of frost, labor problems and recent farm expropriations have caused this area to decline in importance as a vegetable producer. About 1,000 seasonal workers are employed in Sonora and their 3-month earnings amount to roughly \$600,000.

## **Baja California**

In Baja California, there are some 30 to 50 packinghouses, the majority of which are older, smaller, and less efficient than those in Sinaloa and the United States. Some growers are now receiving funds from local banks to build larger packinghouses and many small farm and ejido outfits are modernizing their operations by purchasing overhead carton conveyors, mechanical sizers, and other equipment. In 1979, several modern packingplants came into production, while many others were modernized and expanded.

Unlike shipments from Sinaloa or the United States, no precooling facilities are necessary because of the relatively cooler temperatures in Baja. Nor are ethylene gassing facilities available, because the long haul to market makes them unnecessary.

Approximately 3,000 to 5,000 seasonal workers are employed in Baja and their earnings amount to roughly \$5 million over a 6-month period.

## GOVERNMENT ASSISTANCE

Mexican Government assistance is largely confined to constructing irrigation facilities, providing some credit for small growers, and promoting some research facilities. Indirectly, the Government is assisting growers by maintaining low domestic prices for petiochemicals—gasoline, diesel fuel, plastics, fertilizers, and some chemical sprays—that are now about half as expensive as those found in the United States. However, growers must pay (locally) competitive prices for farm inputs and they tax themselves through a checkoff system for some marketing and research activities.

Although many crops grown for export are still financed by U.S. capital<sup>10</sup> via banks and distribution firms in Nogales, Ariz., some small farmers receive local money and tax advantages. Local farm banks have been set up to finance some small farm and ejidos operations with funds for grower inputs. In addition, the Mexican Government provides some minor tax advantages to these small growers. Despite these financial advantages, large farms are more efficient than the small farms and contribute more to the export market.

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<sup>10</sup>Many annual farm inputs (such as seed) are imported from the United States, and these materials are often financed with U.S. capital. However, most long-term inputs (such as buildings) are locally financed, and large farms are often financially self-sufficient.

The Government is also assisting the railroads to haul produce. However, the railroads are still inefficient and slow to deliver, hence trucks carry most of the vegetables (yet, about 30-35 percent of the produce going through Nogales goes by rail).

The Government also plays a role in allocating crop plantings in Northwestern Mexico in order to balance the competing needs of various farm commodities in both local and export markets. In terms of priorities, the Secretariat of Agriculture and Water Resources (SARH) sets the farm-area allocation first for planting sugarcane, and then for other staple crops such as wheat, rice, beans, corn, and cotton. The remainder is then allocated to all vegetable growers (who also have a strong say in their area allocations) in accordance with anticipated needs of domestic and export markets.

The vegetable grower associations distribute the allocated planted areas for vegetables among individual growers. If growers overplant their area allotment, their irrigation water may be cut off, but this severe measure is rarely taken. Growers, however, make the final decision on the amount of acreage planted.

The grower associations provide many services and have been granted certain police powers by the Federal and State Governments. They set minimum export standards for grade and size—generally well above U.S. minimum requirements—and adjust production and marketing schedules for vegetable exports.

## PRODUCTION

Mexico's production of vegetables has risen dramatically in the last two decades, primarily from higher yields rather than more acreage. From 1960 to 1979, Mexico's tomato production jumped from 389,000 tons to 1,120,000 tons, while similar increases occurred for sweet bell peppers (90,000 to 474,000 tons), and eggplant (1,000 to 27,000 tons). Crop data for cucumbers and squash before 1971 are not available. However, between 1971 and 1979, cucumber production rose from 135,000 to 190,000 tons, while squash output grew from 30,000 to 72,000 tons. During 1960-79, yields rose roughly fourfold for most of these five vegetables, while area actually declined for tomatoes, and rose only moderately for the others.

Much of this additional production is for export, particularly cucumbers, eggplant, and squash (which are not as well known in Mexico as tomatoes and peppers—traditional items in the national diet.) Although a third of the national tomato and sweet pepper production is for export, approximately two-

thirds of cucumber, eggplant, and squash output is exported.

Roughly a third to a half of Mexico's tomato and pepper production is in the Northwest, and, almost all of the country's cucumber, eggplant, and squash is in the Northwest.

The largest advance in vegetable production in Mexico has occurred in Sinaloa because of its extensive river-reservoir system. As foreign and domestic demand for vegetables rose sharply in the 1960's and 1970's, Sinaloa's production increased dramatically. This trend is expected to continue in the 1980's as additional reservoirs come into operation and local and export demand expands.

### Tomatoes

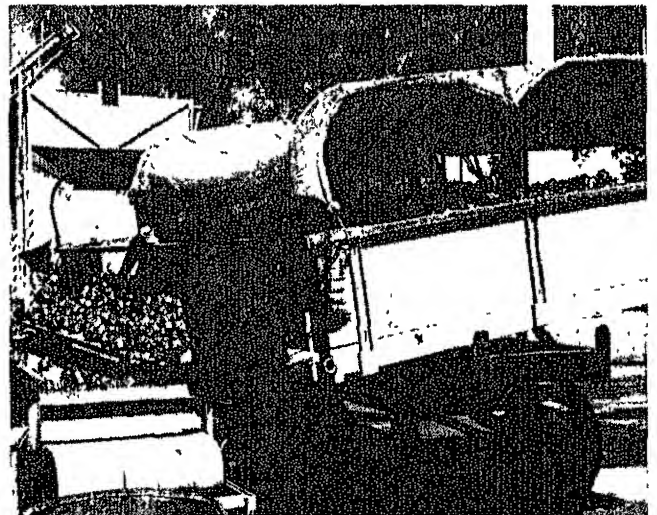
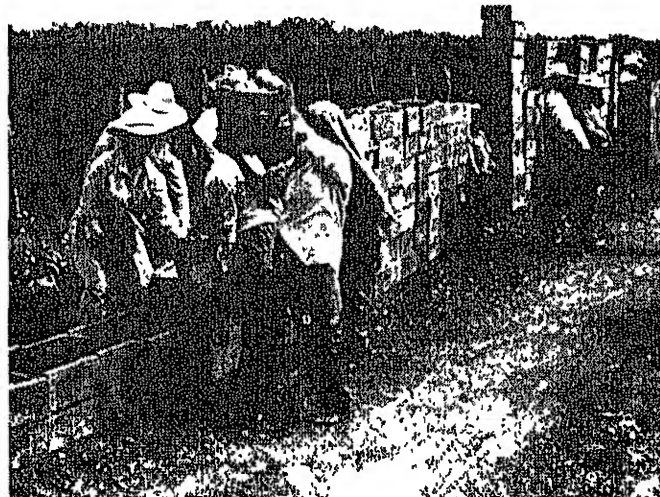
#### Area

The total area devoted to tomatoes in the three northwestern States of Sinaloa, Sonora, and Baja





1. Harvesting green bell peppers in Culiacán
2. Picking cucumbers in Sinaloa.
3. Harvesting staked, vine-ripe tomatoes in Culiacán.
4. A cucumber field fertilized by honey bees.
5. Bringing tomatoes to the central collection points.
6. Unloading sweet peppers at a packinghouse.



California declined from roughly 29,000 hectares (72,000 acres) in 1960 to approximately 18,000 hectares (44,000 acres) in 1979. The area reduction is primarily a result of grower attempts to produce more from a smaller area to lower planting costs, and a shift from ground-grown tomatoes in Sonora and northern Sinaloa to staked tomatoes (which require only a third of the area for the same output) in central Sinaloa. (However, recently there has been expansion of ground grown tomatoes in Guaymas, Sonora.) Unlike Sinaloa and Sonora, Baja has expanded plantings fourfold during the 1960-79 period, but this has not offset area cuts in the other two States.

Most of Northwestern Mexico's tomato area is currently in Culiacán, Sinaloa (12,000 hectares), and in San Quintín, Baja California (3,000 hectares). Smaller areas are found in Los Mochis and Guasave, Sinaloa (1,500 hectares), and in Guaymas and Huatabampo, Sonora (1,000 hectares).

There are two types of tomato production—staked and ground-grown tomatoes. Staked tomatoes account for 80 to 90 percent of overall production and account for virtually all of the production in Culiacán and San Quintín. Ground-grown tomatoes are primarily produced in Guaymas and Huatabampo, in Sonora, and Los Mochis and Guasave, in Sinaloa. Because production in Sonora (Guaymas and Huatabampo) and northern Sinaloa (Los Mochis and Guasave) is risky because of danger from frost, these northern areas are principally planted to the low-cost, ground-grown tomatoes. The high-cost, high-yielding, staked tomatoes are found in the leading tomato districts of Culiacán and San Quintín.<sup>11</sup>

## Yields

Crop yields in Culiacán, Sinaloa, are higher than any other area in all of Mexico. However, Sinaloa's overall yield often averages less than that of Baja, because of the low yields of the ground-grown tomatoes in northern Sinaloa (Los Mochis-Guasave). Baja has few ground tomatoes. Sonora's yields are lower than the other two States, because of the predominance of low-yielding, ground-grown tomatoes and a shorter production season.

Generally, yields average 35-45 tons per hectare (14,000-18,000 standard 22-pound boxes/acre) in Culiacán, Sinaloa, and 30-40 tons (12,000-16,000 boxes/acre) in Baja. In Sonora and northern Sinaloa

yields average only 20-30 tons (8,000-12,000 boxes/acre).

More than any other State, Sinaloa's yields are greatly influenced by the export market. When there are low prices for export, Sinaloa's growers may reduce the number of pickings, have picking holidays, and may ultimately abandon acreage if grower prices do not rise to cover the fixed preharvest and harvesting costs. Consequently, commercial yields drop dramatically when export demand drops, inasmuch as the export market takes about two-thirds of Sinaloa's production.

Adverse weather, particularly cool, cloudy weather, reduces yields throughout the three States. Other weather factors that cut yields sharply include freezes in Sonora and northern Sinaloa and heavy rains during the growing season in Sinaloa and Sonora.

Nevertheless, improved cultural practices boosted yields fourfold during the last two decades. In 1965, yields doubled when most growers adopted staked-tomato culture in Sinaloa and Baja and doubled again during 1965-79 when many growers throughout the three States started using intensive farming techniques—heavy use of fertilizer, pesticides, hybrid varieties, and double-cropping—and extended the harvest period.

## Cultural Practices

Improved cultural practices are basically aimed at increasing yields, thus enabling growers to reduce acreage and cut planting costs, while pushing up production. (With some minor differences, cultural practices for tomatoes are the same as for other winter vegetables.) Recent efforts to boost yields include: 1) More plants per acre; 2) extensive use of greenhouses to grow seedlings in styrofoam boxes that produce larger and healthier plants than the older method of pulling plants from seedbeds; 3) improved hybrid plant varieties and specially formulated fertilizer mixtures to yield larger crops; and 4) use of gondolas—large fiberglass tanks of water mounted on truck-trailers—into which tomatoes picked in the fields are dumped in order to reduce the amount of damaged fruit. Recently, some large farms have begun using plastic mulch to boost yields. Because of these and other advances, yields are expected to continue rising throughout the 1980's.

**Planting.** Generally, tomatoes are planted in September-November and harvested from December to April in central Sinaloa (Culiacán). In Baja (San Quintín) they are planted in April-July and harvested from July to November. In northern Sinaloa (Los Mochis and Guasave) and Sonora (Guaymas and Huatabampo), plantings occur from late February to April for a spring crop and from July to September for a fall crop (see table 3.).

<sup>11</sup> Processing tomatoes (primarily for tomato paste and puree) are also produced in Culiacán, Los Mochis, and Guasave. However, processors are having problems in marketing and in educating growers to produce a crop of uniform quality needed for efficient processing. Nevertheless, this market outlet may expand substantially in the future as production problems are overcome and growers decide to diversify their market outlets.



Table 3.—Planting and Harvesting Dates for Winter Vegetables in Sinaloa, Sonora, and Baja California

Area & item	Planting	Harvesting	From planting to maturity
<b>SINALOA</b>			
Winter crops:			
Cucumbers . . . . .	August 15 to November 30	October 15 to April 30	60-70 days
Eggplant . . . . .	October 1 to January 15	December 15 to May 30	70-80 days
Peppers, sweet . . . . .	August 1 to December 30	November 1 to May 30	80-100 days
Squash . . . . .	October 1 to December 30	November 1 to March 30	50-60 days
Tomatoes:			
Staked . . . . .	September 1 to January 15	December 1 to April 15	80-100 days
Ground . . . . .	September 1 to November 30	January 1 to May 15	100-120 days
<b>SONORA</b>			
Spring crops:			
Cucumbers . . . . .	February 15 to April 15	May 15 to June 30	60-70 days
Peppers, sweet . . . . .	February 1 to April 15	May 1 to June 30	80-100 days
Squash . . . . .	January 15 to April 15	April 1 to June 30	50-60 days
Tomatoes, ground . . . . .	February 1 to April 15	May 1 to June 30	100-120 days
Fall crops:			
Cucumbers . . . . .	August 1 to September 15	October 1 to December 30	60-70 days
Peppers, sweet . . . . .	July 1 to September 15	October 1 to December 30	80-100 days
Squash . . . . .	August 15 to October 1	October 1 to December 30	50-60 days
Tomatoes, ground . . . . .	July 1 to September 15	October 15 to December 30	100-120 days
<b>BAJA CALIFORNIA</b>			
Summer-fall crops:			
Peppers, sweet . . . . .	April 1 to July 30	July 1 to November 30	80-100 days
Tomatoes:			
Staked . . . . .	April 1 to September 15	June 1 to December 15	80-100 days
Ground . . . . .	April 1 to August 30	July 1 to December 15	100-120 days

Source: Centro de Investigaciones Agrícolas de Pacific Norte (CIAPAN) Culiacán, Sinaloa.

April 1980

Commodity Programs, FAS, USDA

Transplanting from greenhouses is the principal planting method used by large farms in Sinaloa, although some use direct seeding. Since greenhouses are not available in Baja, direct seeding is the principal method for large tomato farms on the Peninsula. Small farms throughout the three States generally use transplants from seedbeds, although some buy imported plants from the United States. Seed costs are roughly \$50 per hectare (\$20/acre) while transplants cost about \$90 per hectare (\$35/acre).

Principal tomato varieties used in Sinaloa and Sonora are Walter, Tropic, Pole Boy, and Floridades. While these varieties are also used in Baja, the primary variety is Ace-55. In Culiacán, the earliest plantings (August-September) are Floridades and Culiacán One (which are resistant to root rot from summer rains), intermediate plantings (September-October) are primarily Walters, and late-plantings (November-December) are Tropic, Floridades, Culiacán 360, and Manapal.

The medium-brown, heavy-silt loam soils of northwestern Mexico's coastal valleys require a subsoiler to

loosen the ground for land preparation. Roughly a month before planting the land is subsoiled and plowed, and many large farms have the soil fumigated. The soil is plowed and disked two to four times before being harrowed and leveled. Most growers later furrow the fields for ditch irrigation. In total, land preparation costs the equivalent of \$220 to \$250 per hectare (\$90-\$100 per acre) with the tractor and equipment usage being the major component of this cost.

For staked fields, rows are established with alternate wide and narrow widths of 2 and 1.5 meters (6 and 4 feet). Staked rows usually extend about 50 meters (60 yards) with plants 20 to 30 centimeters (8-12 inches) apart. Ground-grown tomatoes have rows of a uniform distance of 1.8 meters (5 feet) apart, with plants spaced every 20 centimeters. Plant populations for both staked and ground-grown tomatoes are about the same.

The stakes used to hold up the vines are not the standard mechanically cut poles found in the United States, but are rather slender tree branches cut to the appropriate size. Large stakes are placed every 2 to 3 meters (6-9 feet) with several small stakes in between;

four or five strings are tied at various levels to support the plants.

Roughly 700 large, and 5,000 small, stakes are used per hectare (300 and 2,000 per acre, respectively), priced at about 20 and 6 U.S. cents each, respectively. About \$220 worth of henequen cord (shipped in from Yucatán) and approximately \$450 worth of stakes are needed per hectare (\$90 and \$180 per acre, respectively). About 30 worker-days per hectare are required to install the stakes and twine, at a cost of \$180 (\$70/acre).

**Irrigation.** All tomatoes are grown under irrigation. Water comes from irrigation canals in Sinaloa and primarily from deep wells in Baja and Sonora. In Sinaloa, ditch irrigation is primarily used, but drip irrigation is rapidly replacing ditch irrigation in Baja and Sonora because of the lack of water in these States.

Diesel pumps are used primarily for pumping canal water in Sinaloa while electric pumps are used mainly for deep wells in Baja and Sonora. Electric pumps are often used with the drip irrigation systems in Baja and Sonora.

Under ditch irrigation, fields are flooded 5 to 10 times monthly, depending on the weather and the time of the growing season. As a rule, 15 to 25 waterings are required during the 100-day growing cycle. Because of the moderate temperatures and occasional mists from the ocean, substantially less water is required in Baja than in Sinaloa or Sonora, where the hot and dry weather causes greater evaporation.

In Culiacán, it costs about 500 pesos per hectare (\$10/acre) to irrigate a field of tomatoes, which is about twice as expensive as for other crops (since tomatoes require more water). In the drier climates of Baja and Sonora, the cost of water is usually calculated as the cost of drilling a well and operating an irrigation system, roughly \$50 per hectare (\$25/acre).

**Cultivation.** Fields are cultivated about 10 times during the season to kill weeds. Small tractors and horse-drawn plows are used to cultivate between the staked tomato rows. Horses and mules are used widely in most areas of northwestern Mexico, because these animals are specially trained to step around the staked rows of tomatoes without damaging the plants while pulling a one-man plow.

Roughly 10 worker-days of labor are required to cultivate and maintain 1 hectare of tomatoes. Labor costs about \$60 per hectare (\$25/acre) while the cost of using animals, tractors, and cultivators is roughly \$50 per hectare (\$25/acre).

**Fertilization.** Before planting tomatoes, each hectare generally receives about 150 kilograms (330 pounds) of nitrogen, and 50 kilograms (110 pounds) of phosphorous in one form or another. Also potas-

sium and trace elements such as copper, iron, and manganese may be added to the soil if soil tests indicate that they are needed. Two months after planting, about 50 kilograms of 18-46-0 (18 percent nitrogen-46 percent phosphorous-0 percent potassium) or urea may be added as sidedressing, followed by another application a month later.

Nitrogen fertilizer is often applied as liquid ammonia and often mixed with the irrigation water. Total fertilizer use per hectare ranges from 400 to 800 kilograms (360 to 710 pounds/acre) of nitrogen and 200 to 600 kilograms (180 to 530 pounds/acre) of phosphate.

Large farms do not substitute manure for inorganic fertilizer because it often contains weed seeds and is more costly to apply than inorganic fertilizers. However, manure is a favored fertilizer with ejiditarios and campesinos as it is locally abundant and inexpensive. On small farms, manure and ammonium nitrate are generally applied prior to planting, and inorganic nitrate fertilizers are used later as sidedressings.

Most inorganic fertilizers cost \$300 to \$400 per ton and are supplied by PEMEX, FERTIMEX, GUANOMEX, and ROFOMEX (Mexican firms associated with the National Government). Roughly two-thirds of a ton of fertilizer is used per hectare at a cost of \$220 (\$90/acre). However, if manure is used, this cost is reduced substantially.

**Spraying.** Although there is some aerial spraying on the large farms, most spraying is done by hand. Controlling insects or fungus infestations is usually done by semiskilled workers who strap tanks on their backs and hand-spray each row. While some growers neglect spraying, worms and nematodes as well as *Fusarium* and *Tizon* (*Alternaria solani*) can ruin a crop, particularly after an unexpected rainfall.

Insecticide and fungicide costs range from \$50 to \$100 per hectare (\$20 to \$40/acre) for the various formulas used. Both the growers and the Government claim that only pesticides approved by the U.S. Environmental Protection Agency (EPA) are used (the U.S. Food and Drug Administration (FDA) monitors their exports for compliance with EPA regulations). Malathion is often used to control insects, while Benlate, Faltan, and Methyl bromide are the popular fungicides.

Sometimes Mexican vegetables have pesticide residues that are not permitted by the EPA; when the FDA finds these residues, the vegetables are not permitted entry into the United States. For example, in 1980, some tomatoes were found to have Celathion and some peppers had Chlorthiothos, Daconil, or Triazophos, which did not comply with EPA regulations, and these shipments were (reportedly) either destroyed or sent back to Mexico.

## Harvesting

Picking is done every other day during the peak production period, generally January-April in central Sinaloa, May-June in northern Sinaloa and Sonora, and July-November in Baja. Harvesting starts about 100 days after planting and continues for 1-2 months, or until the arrival of adverse weather. Plantings are staggered so that some farms may produce for a 3- to 6-month harvesting season.

In staked fields, laborers pick only the largest fruit for export. The fruit is picked when it has a tinge of yellow or pink at the blossom end; these are the so-called "vine ripers". Ground-grown tomatoes are generally picked in 4-7 day intervals<sup>12</sup> and are labeled as "mature greens"; these have completely green skins but have reached the stage where they will turn red either on or off the vine.

On the large farms, fieldworkers empty buckets of freshly picked tomatoes into large fiberglass gondolas on truck-tractors at the central collection points. Tomatoes are then hauled to the packinghouse where they are flushed out of the gondola into a chlorinated water tank.

On small farms, workers use plastic or cloth bags to collect the tomatoes, which are then dumped into wooden field boxes of 25-30 kilograms (55-65 pounds) net weight at central collection points. Other workers and supervisors load the field boxes onto trucks after counting the number of bags or boxes picked by each worker. The field boxes are then stacked on trucks 3-5 layers high and hauled to the packinghouse where they are unloaded, often using handtrucks and/or forklifts.

Harvesting a hectare of tomatoes requires about 10-20 laborers (primarily women) for each picking, or 300-400 labor-days for the season. Fieldworkers generally receive the minimum wage of 165 pesos (\$7.15) daily<sup>13</sup> (generally they are not paid on a piece rate basis).

## Packing

At the packinghouse door, tomatoes are generally dumped in large bins of chlorinated water to disinfect and wash the fruit. Often, large hydraulic systems are used to water-flume the vegetables off tractor-carts into water baths. Then the fruit (excluding cherry tomatoes) is moved over a series of belts and is sorted by hand for color and grade and by machine for size; cherry tomatoes are placed in 12-pint containers by hand.

<sup>12</sup> Vine ripers (which account for 80-90 percent of production) are picked every 1 or 2 days while mature greens are picked in 4- to 7-day intervals.

<sup>13</sup> Mexico's minimum wage varies from State to State and by urban and rural areas within States. However, these wages all rise by the same percentage each year on January 1.

At sorting tables, tomatoes are separated into "exportable quality" and "domestic market" grades. No. 1 grade fruit usually goes to the export market in the United States or Canada, while No. 2's and No. 3's go to the local market. The more firm, green-colored fruit is generally channeled into the export market inasmuch as it can withstand more handling and repacking with relatively less damage.

Fruit may be placed in 2-layer boxes (flats) of 10 kilograms (22 pounds) net weight, in 3-layer boxes of 14 kilograms (30 pounds) net weight, or in smaller 2-layer boxes of 8 kilograms (18 pounds) net weight. Almost all export quality fruit is hand-placed in the above cardboard boxes, generally the 10-kilogram boxes, except cherry tomatoes, which are placed in 12-pint cartons of 7-8 kilograms (16-18 pounds) net weight. Tomatoes usually go to the local market in large wooden boxes of all sizes, but primarily in boxes of 25-30 kilograms (55-65 pounds) net weight.

Some growers are bulk-packing to cut labor requirements—using 20 to 30 percent fewer workers. Other operations are field packing (particularly other vegetables) to reduce fruit damage. Many operations are starting up packing operations for mixed loads of assorted vegetables because of growing export demand for these shipments.

## Sweet Peppers

Mexico's production of sweet peppers increased fourfold in 1960-79, reaching 474,000 tons, primarily as a result of higher yields. Crop yields rose fivefold while total area gradually expanded to 52,700 hectares (130,220 acres).

In the Pacific Northwest, total area decreased moderately during the 1960-79 period, a sharp reduction in Sinaloa offsetting larger plantings in Baja and Sonora. However, production throughout the Northwest has risen markedly because of better cultural practices. In 1979, area in Sinaloa, Sonora, and Northern Baja was placed at 3,300, 2,400, and 2,000 hectares (8,200, 5,900, and 4,900 acres) respectively, while production was estimated at 50,000, 20,000, and 20,000 tons, respectively.

Generally, sweet peppers are planted from August through December in central Sinaloa (Culiacán), so that they can be harvested from November to May; in Baja (San Quintín), they are planted from April to July and harvested from July to November. In northern Sinaloa (Los Mochis-Guasave) and Sonora (Guaymas-Huatabampo), plantings occur from February through April for harvesting from May to June (a spring crop) and again in July through September for an October-December (fall crop) harvest.

As with tomatoes, the most important recent cultural improvement was the adoption of containerized transplants from greenhouses. Plants are set in rows 0.9 to 1.0 meter (about 3 feet) apart, with

plants every 40 centimeters (16 inches); sometimes rows are wider to permit cultivation to kill weeds. Often stakes are used, at 2- to 3-meter (6 to 9 feet) intervals, so that twine or wire can be strung to support the plants.

California Wonder is by far the leading variety. Other plantings include Yolo Wonder, and Early Wonder. These are the same sweet varieties as the ones grown in the United States.

Most harvesting and cultural practices for peppers are the same as those for tomatoes. However, peppers are not placed in gondolas, as tomatoes are, because they cannot be so immersed in water without damage. Therefore, after picking, peppers are hauled in field boxes to the packing plants where overhead cranes lift the field boxes and dump the peppers into the packing line. After being washed and waxed, sized and graded, peppers are packed primarily in 1 1/9-bushel wirebound crates (25-30 pounds net weight).

## Cucumbers

Mexico's cucumber production increased from 135,000 tons in 1971<sup>14</sup> to 190,000 tons in 1979. During this time, crop yields rose twofold while acreage remained static at about 10,000 hectares (25,000 acres), and even declined in Sinaloa.

Unlike tomatoes and peppers, cucumbers are not traditionally grown in Mexico and most production is for the export market. The Culiacán valley is the primary area in the Northwest for cucumber production, although there are minor areas in northern Sinaloa and Sonora.

Cucumbers are planted in Culiacán from August 15 to November 30. For the earlier plantings (August-September), Ashley and Pointset are the primary varieties and, for later plantings (October-November), the Triumph hybrid is a leading variety.

Cucumbers are directly seeded by tractors and planters. Rows are established about 1.8 meters (5 feet) apart with plants set at 10- to 15-centimeter (4- to 6-inch) intervals. Most cucumbers are staked in the same way as tomatoes, with large stakes every 2½-3 meters (8-10 feet) and several small stakes in between. Twine and wire are tied to the stakes to support the vines.

Bees are brought in to assist in pollination (as is the case with cantalopes, melons, squash and some other items in the cucumber family). Five to 10 beehives are used per hectare and often a fee is paid to an apiculturist (owner of the beehives).

Most cultural and harvesting practices are the same as for tomatoes. Recent advances in yields are

attributed to heavy use of fertilizers, better disease control methods, and the use of gondolas.

At the packinghouse, cucumbers are flushed out of gondolas and washed, waxed, sorted, sized, and graded on a packing line. As with sweet peppers, most cucumbers are place-packed in 1 1/9-bushel wirebound crates and cartons (50-55 pounds net weight).

## Eggplant

Mexico's production of eggplants rose from 1,300 tons in 1960 to 27,000 tons, with an area of 1,200 hectares (3,000 acres) in 1979. Like other vegetables, much of the increased production is attributed to sharply higher yields. Crop yields rose threefold in the last two decades.<sup>15</sup>

Culiacán is essentially the only area for eggplant production in northwestern Mexico, as well as in all of Mexico. However, there are some minor areas in central Mexico that supply Mexico City.

Eggplants are planted in Culiacán from October to January for harvesting from late December through May. Black Beauty is the primary variety, while there are a few fields in Black Magic, Black Oval, Black Night and Long Purple.

As with tomatoes and sweet peppers, the adoption of containerized transplants from greenhouses is the most important recent cultural improvement. Plants are spaced in rows about 0.9 meter (5 feet) apart, with plants set every 50 to 60 centimeters (roughly 18 inches), for a plant population of 10,000 per hectare (4,000/acre). Eggplants are usually staked in the same manner as tomatoes and cucumbers; however, since they are not vine-like plants, the stakes are often smaller or sometimes not used at all.

At the packinghouse, eggplants are water-flumed out of tractor-trailers onto a packingline where they are washed, waxed, sized, sorted, and graded. Exports are hand-packed in bushel crates or cartons, with the most common sizes being 18's and 24's (counts of the number of fruit per container).

## Squash

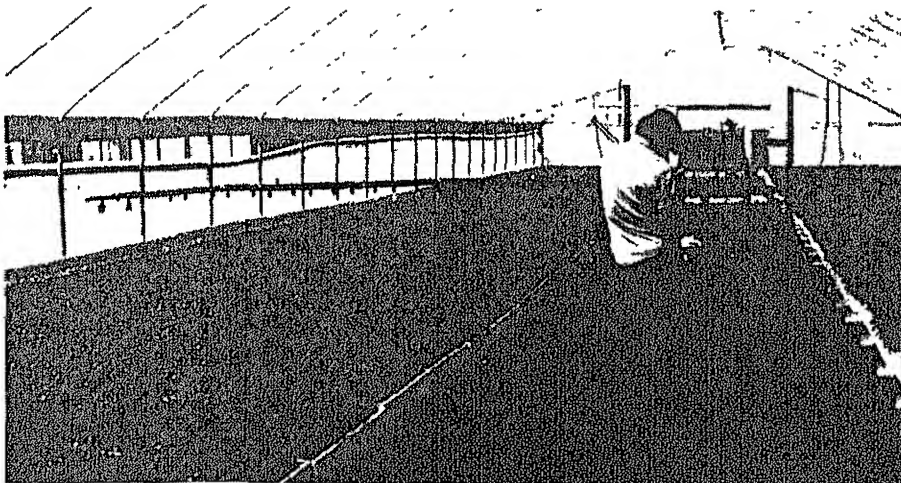
Mexico's production of squash has grown from 25,000 tons in 1971<sup>16</sup>, to 72,000 tons in 1979. During this time, crop yields rose twofold while area planted remained static.

Like cucumbers, squash is not well known in Mexico and most production is grown in the State of Sinaloa for the export market. Zucchini and yellow

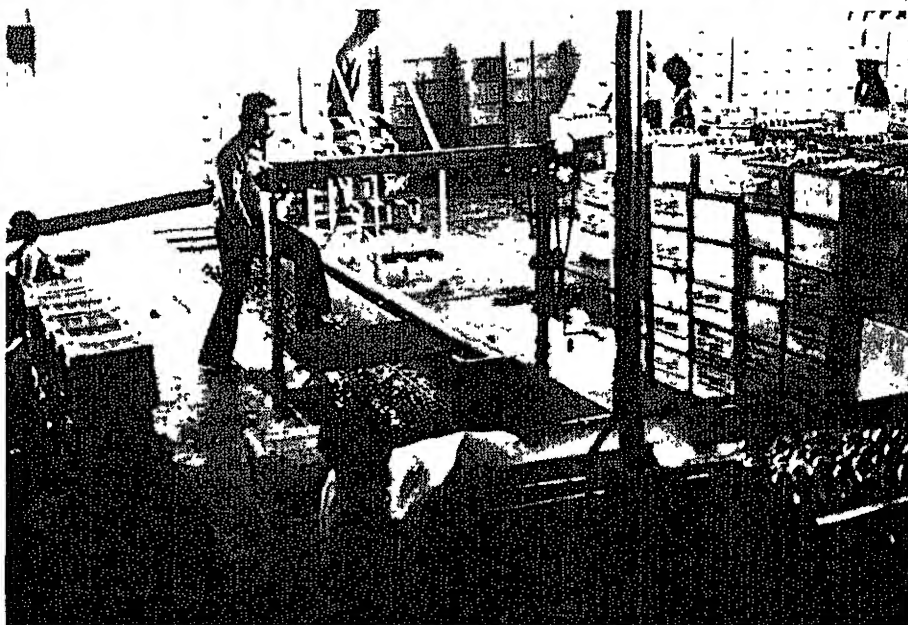
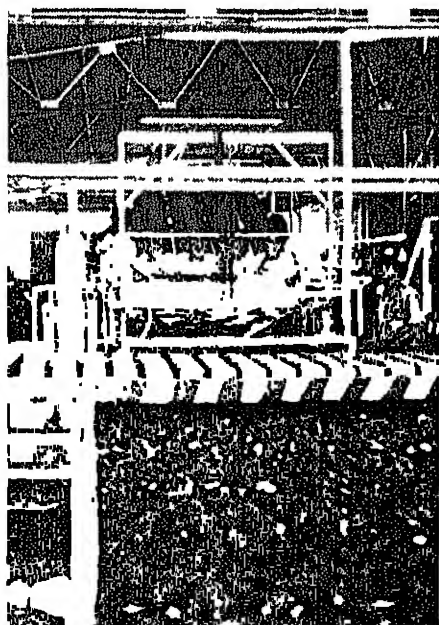
<sup>14</sup>There are no crop statistics prior to 1971.

<sup>15</sup>Although eggplants are not as well-known in Mexico as tomatoes or peppers, Mexico has recorded statistics on eggplant production since 1932.

<sup>16</sup>There are no crop statistics prior to 1971.



1. Watering vegetable seedlings in a greenhouse.
2. Washing and sizing tomatoes in a packinghouse.
3. Sorting tomatoes by color on the packing line.
4. Moving vegetable seedlings from transplanting in the fields.
5. Washing and waxing cucumbers at the packing plant entrance.
6. The owner of a packing plant watching the tomato operation.





summer squash are the most common types with some acorn and other winter squash.

Squash is planted in Culiacán from October through December for harvest from December through April. Squash is directly seeded by tractors and planted with rows 1-1.5 meters (3-5 feet) apart.

The primary zucchini varieties are Aristocrat, Ambassador, Blackini, and Chefinia. The main yellow varieties are Early Prolific Straightneck and Golden Summer Crookneck. The dominant acorn varieties are

Ebony, Table Queen, and Mammoth Table Queen Acorn.

Cultural advances have resulted from use of improved hybrid varieties, better pest and disease control, and intensive use of fertilizer.

At the packinghouse, squash is water-flumed out of tractor trailers into a packing line where it is washed (some is waxed), sorted, sized, and graded. Most squash is hand packed for export in wooden lugs (18-22 pounds, or 24-28 pounds, net weight).

## MARKETING

Since roughly half of the production of vegetables in the northwestern States is exported, produce is either marketed at U.S.-Mexican border points or at shipping points for the domestic market. Growers focus most of their activities on export markets, rather than the local market (still a residual outlet), because the higher valued produce goes to the export outlet.

Most exports from Sinaloa and Sonora pass through Nogales, Arizona, and most of Baja's exports go through San Ysidro, California, to the Chula Vista market. The vegetable distributors—U.S. sales agents representing Mexican growers—in Nogales and Chula Vista are the key agents for exporting this produce, although some minor quantities pass through distributors in Texas and other border points.

For all border points, the method of export marketing is similar. However, the highest level of sophistication and complexity is found in Nogales, Sonora, and Arizona<sup>17</sup>, where 80-90 percent of Mexico's vegetable exports are marketed.

Strong grower-distributor relationships have been formed to span the 1,000-kilometer (600-mile) separation between the Culiacán shipping point and the Nogales distribution point. Similarly, well-established grower-distributor arrangements exist between San Quintín growers and Chula Vista distributors. These Culiacán-Nogales and San Quintín-Chula Vista business links are at the center of the export marketing of Mexico's vegetables (growers in northern Sinaloa and Sonora also rely on the Culiacán-Nogales business network).

### Sinaloa—Sonora

There are about 50 distributors located in offices and warehouses scattered along the highway north of

Nogales, Arizona. These distributors, and some related brokerage outfits, usually are members of the West Mexico Vegetable Distributors Association (WMVDA).

Distributors have longstanding business relationships with Mexican growers, U.S. and Mexican Customs brokers, buyers, sellers, truck brokers, and officials of CAADES, UNPH, and the U.S. and Mexican Governments. By coordinating with all of these offices, distributors are at the center of the export marketing system.

Many distributors are financially integrated with Mexican growers—several distributors are wholly owned subsidiaries of Culiacán's vegetable producers. Some distributors are partly owned by Mexican growers; others have, in effect, partnerships with Culiacán's growers. A few distributors have effective control held by firms with other similar production and marketing interests in the United States.

The Culiacán grower-Nogales distributor arrangement differs from the relationship between U.S. growers and marketing agents. West Mexico distributors generally have closer relationships with their growers because the Mexican growers need official import-export permits and loans from U.S. banks during the season.

Most large-scale producers in Culiacán have increased their economic efficiency by vertically integrating their distribution system to cut commission costs. However, most small-scale Mexican growers are still primarily dependent on capital and marketing arrangements from Nogales distributors. These distributors also furnish other services to growers such as translating reports on crops, weather, and markets. They also provide some supervision of the growing, harvesting, and packaging, as well as supply U.S. farm inputs. Consequently, distributors' fees are high by U.S. standards—generally three to four times above comparable U.S. fees because of the extra services provided.

When produce arrives at the U.S. border, distributors cooperate with U.S. and Mexican Customs brokers, who handle the paperwork and official import-export clearances. After the vegetables have

<sup>17</sup>Nine-tenths of Nogales population and industry is located in Sonora, on the Mexican rather than on the U.S. side of the border. The primary industry of Nogales is the border traffic and the spinoff transportation and other businesses that the border traffic generates.

crossed the border, distributors work with institutional buyers, other sellers, shippers, and truck brokers in order to move the produce into the U.S. and Canadian marketplaces.

On the southern side of the border (Nogales, Sonora), Mexican customs brokers work with Food Safety and Quality Service (USDA/FSQS) grade (quality) inspectors, and officials of CAADES, UNPH, and the Mexican Customs Service. North of the border (Nogales, Ariz.), U.S. Customs brokers work with U.S. Customs officials, USDA quarantine (Animal and Plant Health Inspection Service—Plant Protection and Quarantine APHIS-PPQ/USDA) inspectors, and Food and Drug Administration FDA pesticide investigators.

Mexican Customs brokers prepare "Pedimentos," an export declaration needed by Mexican Customs officials, and a "certificate of origin," required by U.S. Customs officials. American Customs brokers use the "certificates of origin" to move the produce through U.S. import procedures to reach the Nogales (Arizona) distributors warehouse.

The Culiacán grower initiates the entire import-export market procedure by calling up the distributor and the U.S. and Mexican Customs brokers, after the loading of a truck or railcar for shipment. When the grower, or the distributor, tells the Mexican Customs broker what, precisely, is in the shipment, the Mexican Customs broker writes up an "invoice" and a "pedimento" that matches the grower's "manifest" sent with the shipment.

When the truck or railcar arrives at the Mexican produce compound (owned and operated by CAADES), the truck driver presents the "tipo de embase," a certificate issued by the UNPH to the growers for use by CAADES officials to calculate CAADES and UNPH assessments on export shipments. Then, CAADES officials complete the filling out of the "certificates of origin" on shipments for Mexican Customs officials.

During this time, Customs brokers are having the shipment unloaded for sampling, sizing, and grading by USDA inspectors to determine if these imports meet minimum U.S. marketing order standards.<sup>18</sup> Then the USDA papers are presented to CAADES and UNPH officials to see if they comply with minimum UNPH export standards (which are generally well above U.S. minimum requirements).

After obtaining a UNPH export permit<sup>19</sup>, the

Mexican Customs broker presents both the "pedimento" and the "certificates of origin" to the Mexican Customs officials who assess export tax duties, based on official Mexican produce prices, and compile Mexican export statistics.

Once all the clearances and papers are prepared, the shipment may move on to the U.S. Customs facility at the U.S. side of the border. This entire process in the Mexican CAADES compound takes 2-5 hours.

Upon arriving at the U.S. Customs compound, the truck driver presents three inward manifests, displaying the truck number, the number of boxes of each vegetable, the weight and the destination of the shipment. U.S. Customs brokers match their invoices (written up earlier from information received by wire) with the Mexican manifests, and then process the manifests and weigh sample packages of the produce to verify the listed weight. This process is done by U.S. Customs officials at each broker's loading dock, while the broker is watching. U.S. import duties are levied according to the final weight determination, except where produce, such as melons, are assessed duties on a value basis, ad valorem duties, which requires checking of price declarations by U.S. Customs officials (see Table 4.).

At the same compound, the shipments are sampled for insects and disease by the USDA-PPQ officials and by the Food and Drug Administration representatives. The Plant Quarantine inspectors check for harmful diseases or pests that could endanger U.S. crops. The FDA samples for pesticide residues that are not permitted by Environmental Protection Agency (EPA) standards and for "wholesomeness" of imported products.

After about 1 hour, the truck is cleared to leave the U.S. Customs compound for the Arizona State Highway Department checkpoint, where documents for fumigation (required for some produce) and licenses are examined. When everything is determined to be in order, the truck moves to the distributor's warehouse in Nogales. At the warehouse, the shipment is still subject to spot checks by U.S. Customs, USDA, or FDA inspectors to make sure that the weight, grades, and number of boxes still match those on the manifest.

At the distributor's warehouse the produce is sold on commission or on consignment. Although produce at Culiacán is consigned to a distributor (for Customs clearance procedures) the distributor may sell the produce in either the U.S. or Canadian market on commission f.o.b. Nogales, or on consignment to the receiver at a terminal market. Generally, growers and distributors jointly decide whether to sell on commission or consignment. As a rule distributors always make some money on consignment sales, while growers may actually lose money (after paying tariff duties and marketing fees). Distributors have progressively added to the number of items available,

<sup>18</sup>Under section 608e of the U.S. Agricultural Marketing Agreement Act (1937), U.S. imports must meet the same or comparable grade and size standards. Of the five winter vegetables, U.S. marketing orders are in effect for tomatoes only.

<sup>19</sup>If the UNPH does not issue an export permit, the shipment is usually returned to the grower. However, some trucks go to other border points such as Calexico, Calif., and enter the United States without UNPH permits. Mexican producers refer to this as "contraband."

particularly on "mixed load" vegetable selections. The "one-stop" convenience of mixed loads is, reportedly, attractive to small-scale institutional buyers who might otherwise have to go to several sources for an array of vegetables.

## Baja California

Baja California's marketing system is similar to Sinaloa's operation, except that it is not as complex. The U.S. Government and the UNPH impose the same quality standards that apply to Sinaloa's ex-

ports. The U.S. distributors are located in Chula Vista, California, and the overall brokerage operations are the same as in Nogales, except that the procedure passes through the San Ysidro border point.

Because only 5 to 10 percent of produce volume moves through San Ysidro compared with Nogales, there are only a few brokers and a few Mexican officials. Baja's growers decide whether to market the best quality produce in the local or export market, depending on the prices quoted to them by Chula Vista distributors; Sinaloa's growers almost always sell their best quality produce in the export market regardless of the price.

Table 4.—U.S. Tariff Duties for Winter Vegetables, 1980

Vegetable	TSUS item no.	Time period	Country of origin	Rates of duty	
				Column 1 MFN	Column 2 other
Cucumbers:	135.90	Dec. 1 through Feb. 29	All	2.2¢/lb.	3¢/lb.
	135.91	Dec. 1 through Feb. 29	Cuba(s)	1¢/lb.	—
	135.92	March 1 through June 30 and Sept. 1 through Nov. 30	All	3¢/lb.	3¢/lb.
	135.93	March 1 through June 30 and Sept. 1 through Nov. 30	Cuba(s)	2.4¢/lb.	—
	135.94	July 1 through August 31	All	1.5¢/lb.	3¢/lb.
Eggplant:	136.20	April 1 through Nov. 30	All	1.5¢/lb.	1.5¢/lb.
	136.21	April 1 through Nov. 30	Cuba(s)	1.2¢/lb.	—
	136.22	Dec. 1 through Feb. 29	All	1.1¢/lb.	1.5¢/lb.
	136.23	Dec. 1 through Feb. 29	Cuba(s)	0.5¢/lb.	—
Peppers:	137.10	Jan. 1 through Dec. 31	All	2.5¢/lb.	2.5¢/lb.
	137.11	Jan. 1 through Dec. 31	Cuba(s)	2.2¢/lb.	—
Squash:	137.50	Jan. 1 through Dec. 31	All	1.1¢/lb.	2¢/lb.
	137.51	Jan. 1 through Dec. 31	Cuba(s)	0.8¢/lb.	—
Tomatoes:	137.60	March 1 through July 14 and Sept. 1 through Nov. 14	All	2.1¢/lb.	3¢/lb.
	137.61	March 1 through July 14 and Sept. 1 through Nov. 14	Cuba(s)	1.8¢/lb.	—
	137.62	July 15 through Aug. 31	All	1.5¢/lb.	3¢/lb.
	137.63	Nov. 15 through Feb. 29	All	1.5¢/lb.	3¢/lb.
	137.64	Nov. 15 through Feb. 29	Cuba(s)	1.2¢/lb.	—

(Note: (s) denotes suspended (in 1962).

Source: Tariff Schedules of the United States (TSUS) annotated, 1980, U.S. International Trade Commission.

April 1980

Commodity Programs, FAS, USDA

## TRANSPORTATION

Virtually all shipments are by refrigerated truck-trailers, although railroad transportation is reviving. At the packinghouse, vegetables are loaded in boxes and stacked on pallets that are either placed into trucks or piggyback railroad trailers ("pigs").

Sinaloa and Sonora have both railroad and highway transportation, while Baja does not have a railroad. Sinaloa and Sonora are serviced by Highway

No. 15 and the Guadalajara Nogales railroad—constructed in 1885 by the U.S. Southern Pacific Railroad (nationalized in 1951). Baja's producers use Highway No. 1, which runs down the length of the entire peninsula.

Truck shipments from Culiacán to Nogales generally take 14 to 16 hours over the 1,000-kilometer (600-mile) road. The trip from San Quintín, Baja, to



the San Ysidro border point takes 24 hours for the 1,000-kilometer (600-mile) trip. Tractor-trailer units are the same type as those used in the United States, except that Mexican trucks usually have "giant cow-catcher" bumpers in front.

Both (Baja's) Highway No. 1 and (Sinaloa-Sonora's) No. 15 consist of only two lanes on top of old roadbeds that often wash away when heavy rains cause flashfloods. Baja's road is over more mountainous terrain and is slower than Sinaloa's and Sonora's road. It costs about \$700 to send a truck from Culiacán to Nogales and about \$250 to truck vegetables from San Quintín to San Ysidro.

During the last two decades, railroad transportation declined to almost nothing; however, it is starting up again with the assistance of Mexico's nationalized railroad, Ferrocarril del Pacifico (FCP). This railroad recently purchased 100 "pigs" to add to its fleet of 400 trailers. FCP has granted exclusive transport rights to Arrendadora Méjicana Sociedad Anónima (AMSA), a company that owns a fleet of trucks in both Culiacán and Nogales. AMSA delivers pigbacks from warehouses to the railroads in Culiacán; upon arrival in Nogales offloads the trailer and delivers the trailer to the warehouses in Nogales, Arizona.

Nevertheless, rail service is reportedly poor. Because transport by rail is slow and unloading arrangements are poor, growers and distributors often lose

money on shipments—even though railroad fees are only about a third of trucking rates.

During the height of the railroad hauling business in the 1950's, 5,000 to 6,000 "pigs" were loaded in a season.<sup>20</sup> Most of this business was handled by the Pacific Fruit Express (PFE) "pigs," on the U.S. Southern Pacific Railroad. Railroads crossed the border at the main tourist border point in downtown Nogales where they were checked and sent directly to U.S. retail markets. Now, railroad "pigs" are moved to trucks, south of the border (at the CAADES-Mexican Customs compound) and return to the Mexican shipping points.

Presently, both the U.S. and Mexican truck compounds can accommodate 400 to 500 trucks daily. Roughly 43,000 trucks are checked at these two compounds over the entire season.

Mexican trucks unload vegetables at the distributors' warehouses, just north of Nogales, Arizona, and return to their shipping point. From the distributors' warehouses, U.S. trucks take shipments to the U.S. terminal (wholesale) and retail markets.

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<sup>20</sup>In the 1920's almost all shipments (mature green tomatoes) were by rail cars from Guaymas through Hermosillo to Nogales. Sometimes trains carried armed guards for protection against bandits and revolutionaries—who were often indistinguishable.

## FOREIGN TRADE

Mexico's vegetable exports traditionally begin in October, rise slowly in the fall (October-December), peak in the winter and early spring (February-April), and drop rapidly in the late spring (May-June). Sinaloa produces more vegetables for export than any other State because of the timing of its crop harvests, which coincide with seasonally low production in the United States.

Roughly two-thirds of Sinaloa's output is for export, half of Sonora's, and a third of Baja's. Sinaloa's harvests are during the winter and early spring, when Mexico's exports are at the highest level. Sonora's crops are in the spring and fall, when exports are at an intermediate level; Baja's summer and early fall crops are harvested when exports are at a seasonal low.

In 1978/79 (October-September), U.S. imports from Mexico included: 323,548 tons of tomatoes (valued at \$155 million), 133,065 tons of cucumbers (valued at \$46 million), 62,671 tons of peppers (valued at \$37 million), 43,334 tons of squash (valued at \$19 million), and 17,203 tons of eggplant (valued at \$7 million). In 1978/79, rains and adverse weather reduced Sinaloa's production, and total

exports were 5 to 10 percent below the previous year's record-high level.

During the last five winter seasons (January-March), Mexico accounted for 60 percent of all the tomatoes marketed in the United States, 80 percent of the cucumbers, 70 percent of the eggplant, and 50 percent of the sweet peppers and squash. Because of the similar marketing seasons, Mexico (particularly Sinaloa) competes more directly with Florida than with any other U.S. State.

The United States and Canada account for 99 percent of Mexico's vegetable exports, with Canada taking about a fifth. In calendar 1978, Canada imported 92,000 tons of tomatoes (valued at C\$43 million), 23,000 tons of cucumbers (valued at C\$8 million), and 6,000 tons of peppers (valued at C\$3 million) from Mexico<sup>21</sup>. Although the United States supplies two to four times the volume of these vegetables to the Canadian market (over the whole year) as does Mexico, Mexico is the leading supplier in the winter.

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<sup>21</sup>Canada's import statistics do not separately classify eggplant and squash.

Tomatoes are one of Mexico's leading agricultural exports. Before the coffee price increases in 1976-78, tomatoes were Mexico's top agricultural foreign exchange earner. Because tomato and other winter

vegetable exports are a traditional source of employment and foreign exchange in Mexico, this trade has been a particularly sensitive item in U.S.-Mexican relations for over three decades.

## OUTLOOK

The outlook for Mexico's vegetable export industry is very favorable, given the additional resources allocated to the industry and the growing market outlets. Essential physical and economic resources—land, labor, capital, technology, and water—are being invested in the industry at a rapid rate. Because the industry is both labor intensive and an important foreign exchange earner, producer groups have little difficulty in gaining support for expanding their enterprises.

Although production costs have been rising more rapidly in Mexico than in the United States, Mexico's Government is committed to ensuring that Mexico's vegetable exports remain competitive. Because labor costs—the largest component of production costs—are increasing faster in Mexico than in the United States, the Mexican Government is gradually allowing the use of labor-saving devices to compensate for rapidly rising minimum wages. Furthermore, Mexico's prices for petroleum and natural gas-based products (gasoline, fertilizer, plastics, and various chemicals) are now almost half of comparable U.S. prices, and in the future this cost advantage may provide a decisive assist to exporters.

Though export markets are growing in both the United States and Canada, the fastest growth has recently been in the Mexican domestic market. As Mexico's population and income continue to rise rapidly, more produce from northwestern Mexico will be sent to the domestic market, about half of Sinaloa's vegetables now go to the domestic market whereas in the recent past this area produced almost solely for export. Moreover, vegetables have played an important role in the National Government's attempt to improve the typical corn-based, starchy diets of the average Mexican.

Market outlets are also diversifying as growers increase output of vegetables other than the tomato,

the traditional mainstay of the industry. Production of sweet peppers, cucumbers, eggplant, summer squash, and many other items (such as processed and frozen vegetables) is increasing at an unprecedented rate as both consumers in the local and export markets demand more vegetables. For this reason, producer associations are allocating almost \$1 million annually to promote consumption, at the point of purchase, of fresh winter vegetables from "sunny Mexico." Producers believe that their promotion activities are paying dividends by increasing exports to Canada and the United States, by way of increased consumer demand.

Production should increase sharply in the 1980's as new reservoirs in Sinaloa come into operation. This, coupled with the expansion in other production facilities, should easily permit growers to boost output to meet the expected growth in local and export market outlets.

Despite the favorable outlook for the industry, there are problems, particularly in obtaining industrial inputs. Virtually all farming and packaging materials are controlled by various Government agencies (or Government-affiliated agencies) that are often slow to supply. Although Mexico has a high unemployment rate, unionization and rapidly rising minimum wages are increasing production costs and causing new financial problems.

Nevertheless, the industry is expected to expand substantially during the 1980's. As the new reservoirs come into operation, winter vegetable production will probably double by 1980, with exports to the United States and Canada showing similar growth. As North America's per capita consumption of salad vegetables continues to rise, Mexico's output and exports of tomatoes and other fresh vegetables should expand accordingly.

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## REGRESSION ANALYSIS OF U.S. IMPORTS OF MEXICAN TOMATOES

Regression analysis may be used to explain the historical relationships underlying U.S. imports of Mexican tomatoes. In this regression model<sup>1</sup>, changes in U.S. imports are primarily explained by variation in supplies in Mexico and Florida and by U.S. import demand, as reflected by U.S. population growth. Thus, the basic parameters of this model are production levels in Mexico and Florida and the U.S. population (see the following figure).

Roughly a fourth of Mexico's total tomato production is exported, and this is reflected in the  $\hat{B}_1$  estimator of .267 (about 27 percent of Mexico's crop was estimated to be exported). Florida's winter crop has the greatest competitive effect on U.S. imports; and this  $\hat{B}_2$  estimator of -.534 indicates that Florida's winter crop displaces U.S. imports by an estimated 53 percent. The U.S. population growth estimator,  $\hat{B}_3$  of 178, reveals that as the U.S. population rises by 1 million persons, an additional 178 tons of tomatoes (about .2 kilograms—0.5 pounds—per person). Since U.S. per capita consumption has remained relatively constant (at about 12 pounds per person) the steady growth in the U.S. population during the last 35 years is a proxy variable for the underlying trend for increased import demand. Because Cuba shipped large amounts of tomatoes to the United States during 1949/50 to 1960/61 (and caused a large degree of autocorrelation in the model without this parameter), this is accounted for by a Dummy variable,  $\hat{B}_4$ .

Most year-to-year variation in imports in this model is estimated by production levels in Mexico and Florida. Competing supplies in these areas deter-

mined the majority of the changes in imports, because demand, although rising, has been relatively stable during the last 35 years.

There is little correlation between production levels in Mexico and Florida, i.e., when Florida's crop is large, Mexico's decreases, and vice versa. Mexico is largely a residual supplier of tomatoes to the U.S. market. When adverse weather reduces the winter crop in Florida (for example after the disastrous Florida freeze in 1977), U.S. imports increase.

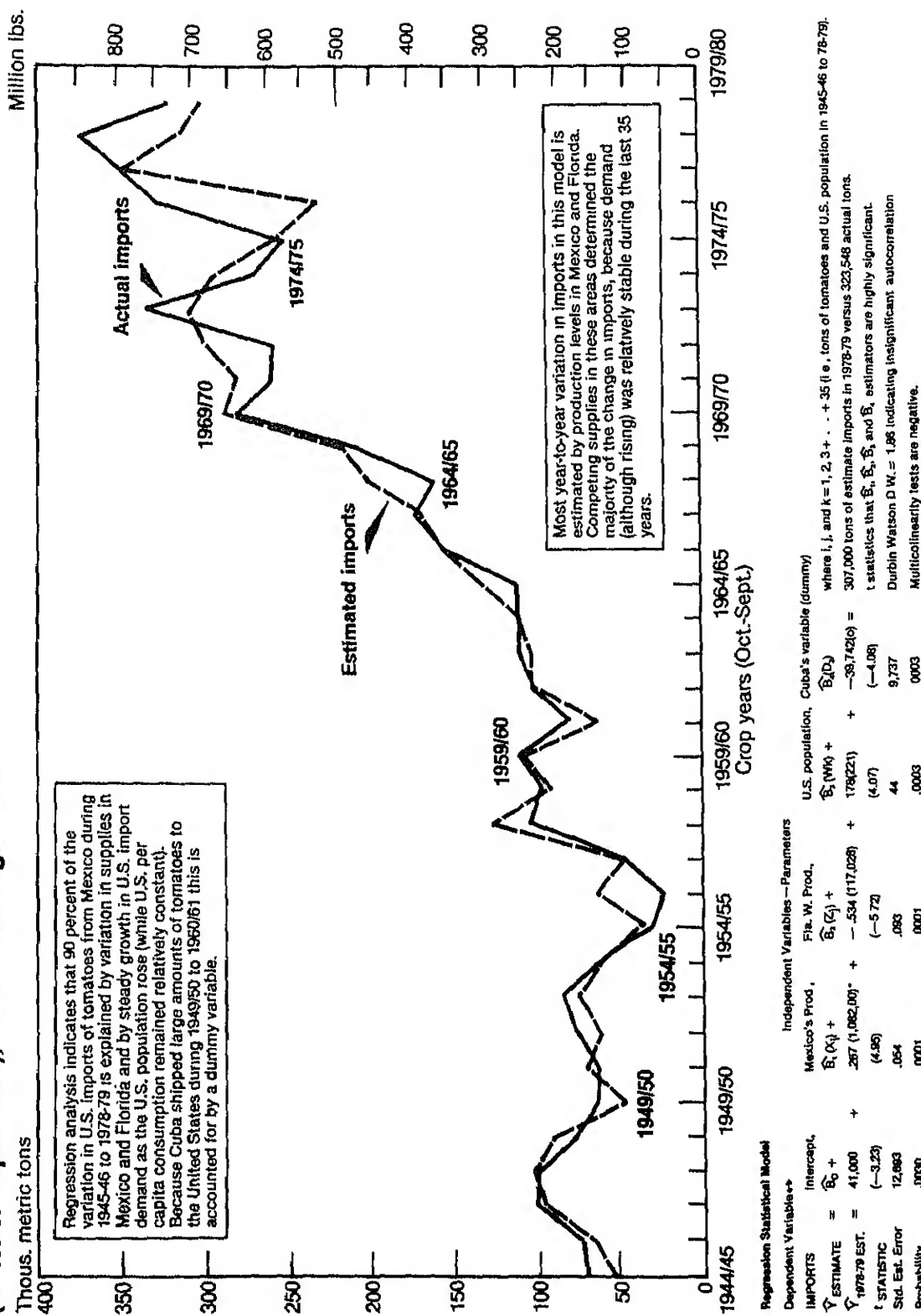
Inasmuch as only a fourth of Mexico's total production is for export, most of the Mexican output increases go to the domestic market and do not affect production in Florida. However, Florida's winter crop does displace some U.S. imports from Mexico, but these displaced shipments are then diverted to the Mexican national market and are an insignificant amount of Mexico's total production. Thus production in Mexico and Florida is largely independent, and primarily depends on areas planted and the weather rather than on U.S. import levels.

The *t* statistical tests indicate that parameters ( $\hat{B}_1$ -Mexico's total production,  $\hat{B}_2$ -Florida's winter production,  $\hat{B}_3$ -U.S. population, and  $\hat{B}_4$ -Cuba's 1949/50-60/61 presence in the U.S. market) are highly significant in estimating U.S. imports in 1944/45-78/79. The correlation coefficient,  $R^2=.90$ , indicates that 90 percent of the variation in U.S. imports was explained by variation in these parameters. The Durbin Watson statistic (D.W.=1.86) indicates insignificant autocorrelation; multicollinearity tests are negative.

This is just a regression statistical model to explain historical relationships, rather than to project future U.S. import levels. In order to use this model to forecast future import levels, this model should be elaborated to include some economic variables, such as prices, costs, and exchange rates.

<sup>1</sup> Estimated imports (=) (1) Mexico's production, (2) Florida winter production, (3) U.S. population, and, (4) Cuba's trade.

# U.S. Imports of Mexican Tomatoes: Actual vs. Estimated Imports in Crop Years (October-September), 1944/45 through 1978/79



Regression Statistical Model

Dependent Variable	Intercept	Mexico's Prod., $\hat{B}_1(X_i)$	U.S. Pop., $\hat{B}_2(W_i)$	Cuba's variable (dummy), $\hat{B}_3(D_i)$	where $i, j, \text{ and } k = 1, 2, 3 + \dots + 35$ (i.e., tons of tomatoes and U.S. population in 1945-46 to 78-79).
IMPORTS	$\hat{B}_0 +$	$\hat{B}_1(X_i) +$	$\hat{B}_2(W_i) +$	$\hat{B}_3(D_i)$	307,000 tons of estimate imports in 1978-79 versus 323,548 actual tons.
$\hat{Y}_{1978-79 \text{ EST.}}$	$= 41,000$	$+ 287 (1,062,000) +$	$+ 178(221) +$	$-39,742(i) =$	t statistics that $\hat{B}_1, \hat{B}_2, \text{ and } \hat{B}_3$ estimators are highly significant.
$t$ STATISTIC	$(-3.23)$	$(4.95)$	$(4.07)$	$(-4.08)$	Durbin Watson $DW = 1.98$ indicating insignificant autocorrelation
Std. Est. Error	12.863	.054	.003	9.737	Multicollinearity tests are negative.
Probability	.0000	.0001	.0003	.0003	

$R^2 = .90$  indicating that 90 percent of the variation in imports is explained by variation in these data.

$\sigma^2$  STANDARD DEVIATION = .15 indicating that 2 out of 3 times imports should fall within 15 percent of the import estimate (in 1979, the estimate was 5 percent below actual imports)

Note: Imports are correlated with competing supplies in Mexico, Florida, and Cuba (as a dummy variable for 1950-51) while U.S. import demand is represented by the U.S. population

\* January 1980 estimate.

Table 1.—Mexico's Area and Production of Selected Vegetables, 1955-79

Crop Year Oct.-Sept.	Area					Production				
	Cucumbers	Eggplant	Peppers Green	Squash	Tomatoes	Cucumbers	Eggplants	Peppers Green	Squash	Tomatoes
	HA	HA	HA	HA	HA	MT	MT	MT	MT	MT
1955 . . . . .	—	68	19,123	—	62,519	—	554	41,577	—	363,607
1956 . . . . .	—	51	25,520	—	64,790	—	422	64,515	—	371,714
1957 . . . . .	—	48	27,953	—	60,990	—	383	69,329	—	341,019
1958 . . . . .	—	45	30,111	—	62,387	—	373	80,495	—	354,811
1959 . . . . .	—	144	32,747	—	62,802	—	1,235	88,415	—	372,476
1955-59 Average . . .	—	71	27,091	—	62,698	—	593	68,866	—	360,725
1960 . . . . .	—	148	33,287	—	63,805	—	1,270	90,492	—	388,648
1961 . . . . .	—	383	34,117	—	61,719	—	3,215	96,798	—	453,125
1962 . . . . .	—	392	37,409	—	60,355	—	3,277	109,206	—	433,819
1963 . . . . .	—	442	40,129	—	60,540	—	3,663	122,701	—	442,682
1964 . . . . .	—	467	41,517	—	61,142	—	3,903	133,619	—	444,971
1960-64 Average . . .	—	366	37,292	—	61,512	—	3,066	110,563	—	432,649
1965 . . . . .	—	545	41,751	—	45,023	—	4,556	134,440	—	553,938
1966 . . . . .	—	584	42,502	—	45,246	—	4,877	167,129	—	555,213
1967 . . . . .	—	652	37,801	—	46,173	—	5,495	199,522	—	618,956
1968 . . . . .	—	906	38,259	—	52,338	—	7,899	191,721	—	669,677
1969 . . . . .	—	1,027	35,588	—	55,164	—	16,032	178,384	—	714,912
1965-69 Average . . .	—	743	39,180	—	48,789	—	7,772	174,239	—	622,539
1970 . . . . .	—	1,040	36,291	—	63,721	—	17,100	190,836	—	923,063
1971 . . . . .	13,189	684	44,949	—	61,384	134,526	14,551	310,302	24,902	938,584
1972 . . . . .	17,527	1,065	60,787	—	71,714	145,651	20,330	435,070	33,232	1,203,702
1973 . . . . .	11,498	1,335	56,876	—	69,408	121,515	24,834	339,511	43,266	1,091,001
1974 . . . . .	10,187	1,165	55,765	4,388	62,577	113,255	22,625	415,614	42,726	1,120,846
1970-74 Average . . .	13,100	1,058	50,934	—	65,761	128,749	19,888	338,267	36,258	1,055,439
1975 . . . . .	10,592	990	40,189	4,955	59,361	85,381	19,305	273,149	47,986	1,056,408
1976 . . . . .	12,599	698	40,246	4,969	48,359	106,760	15,616	338,930	54,868	806,831
1977 . . . . .	6,716	443	49,821	4,530	61,695	127,957	13,854	481,682	62,333	974,258
1978 <sup>1</sup> . . . . .	7,301	1,088	59,716	3,000	59,232	144,072	23,306	465,972	66,946	1,117,360
1979 <sup>1</sup> . . . . .	9,500	1,200	52,700	2,800	61,850	190,000	27,000	474,300	71,900	1,082,375
1975-79 Average . . .	9,342	884	48,534	4,051	58,099	130,834	19,816	406,807	60,807	1,007,446

— Not available, unknown, or not applicable.

<sup>1</sup> Preliminary.

Source: Unión Nacional de Productores de Hortalizas (UNPH), and Dirección General de Economía Agrícola, Secretaría de Agricultura y Recursos Hidráulicos (DGEA, SARH).

April 1980

Commodity Programs, FAS, USDA

Table 2.—Tomatoes: Mexico's Area, Yields, Production, Price, Value, Foreign Trade, and Consumption, 1925-79

Year	Area Harvested	Yields Avg./Ha.	Production	Price, Avg. Grower	Value of Production	Foreign Trade		Consumption	
						Imports	Exports	National	Per capita
	HA	Kg	MT	Pesos/MT	Pesos	MT	MT	MT	Kg
1925	21,485	2,792	59,977	101	6,060,064	—	38,298	21,679	1,392
1926	25,705	2,642	67,918	107	7,273,932	—	39,563	28,355	1,798
1927	30,239	2,763	83,552	101	8,423,506	—	57,361	26,191	1,641
1928	29,329	3,029	88,831	96	8,514,187	—	51,923	36,908	2,285
1929	29,054	3,264	94,823	117	11,118,165	—	28,897	65,926	4,032
1925-29 Average	27,162	2,909	79,020	105	8,277,971	—	43,208	35,812	2,244
1930	22,159	3,669	81,312	121	9,860,929	251	64,174	17,389	1,051
1931	21,681	3,573	77,474	91	7,025,203	278	51,537	26,215	1,557
1932	21,898	3,945	86,386	121	10,468,346	153	59,201	27,338	1,596
1933	19,301	3,438	66,351	80	5,278,354	251	21,237	45,365	2,603
1934	14,179	3,597	51,003	83	4,254,637	206	14,648	36,561	2,062
1930-34 Average	19,844	3,654	72,505	102	7,377,494	228	42,159	30,574	1,784
1935	14,454	3,637	52,569	106	5,559,818	350	25,289	27,630	1,532
1936	15,635	4,395	68,721	141	9,664,678	440	27,987	41,174	2,244
1937	15,671	4,820	75,537	145	10,919,834	457	33,600	42,394	2,271
1938	15,749	4,148	65,325	159	10,378,130	484	21,792	44,017	2,318
1939	19,550	4,098	80,117	162	13,007,768	421	13,704	66,834	3,460
1935-39 Average	16,212	4,222	68,454	145	9,906,046	430	24,474	44,410	2,378
1940	20,588	3,903	80,362	170	13,662,625	484	16,136	64,710	3,293
1941	26,894	4,699	126,376	195	24,680,226	1,007	43,394	83,989	4,159
1942	30,921	5,066	156,635	208	32,616,161	992	70,628	86,999	4,192
1943	32,623	5,317	173,441	270	46,803,896	418	93,186	80,673	3,783
1944	37,883	5,518	209,047	295	61,656,495	192	97,327	111,912	5,108
1940-44 Average	29,782	5,009	149,172	241	35,883,881	619	64,134	85,657	4,125
1945	41,366	5,656	233,963	337	78,904,391	104	103,219	130,848	5,812
1946	40,236	5,600	225,340	348	78,348,351	267	88,261	137,446	5,941
1947	41,566	5,805	241,286	342	82,503,731	1,005	126,971	115,320	4,851
1948	49,724	5,761	286,444	444	127,148,351	2,415	114,298	174,561	7,146
1949	48,917	6,850	335,073	494	165,548,586	3,311	102,877	235,507	9,383
1945-49 Average	44,362	5,961	264,421	403	106,490,682	1,420	107,125	158,736	6,672

See footnotes at end of table.

Continued—



Table 2.-Tomatoes: Mexico's Area, Yields, Production, Price, Value, Foreign Trade, and Consumption, 1925-79—Continued

Year	Area Harvested	Yields Avg./Ha.	Production	Price, Avg. Grower	Value of Production	Foreign Trade		Consumption	
						Imports	Exports	National	Per capita
	HA	Kg	MT	Pesos/MT	Pesos	MT	MT	MT	Kg
1950 . . . . .	56,443	6,287	354,854	509	180,561,979	2,442	82,573	274,723	10,652
1951 . . . . .	57,608	6,223	358,500	513	184,001,828	2,421	99,406	261,515	9,837
1952 . . . . .	59,564	5,873	349,821	512	179,265,849	5,468	107,716	247,573	9,035
1953 . . . . .	61,730	6,001	370,428	518	192,063,511	4,728	118,255	256,901	9,095
1954 . . . . .	62,500	6,000	374,999	534	200,341,128	4,186	82,845	296,340	10,178
1950-54 Average . . . .	59,569	6,072	361,720	518	187,246,859	3,849	98,159	267,410	9,749
1955 . . . . .	62,519	5,816	363,607	655	238,259,853	1,558	49,254	315,911	10,526
1956 . . . . .	64,790	5,737	371,714	731	271,881,839	887	50,368	322,233	10,416
1957 . . . . .	60,990	5,591	341,019	999	340,806,132	2,112	73,541	269,590	8,454
1958 . . . . .	62,387	5,687	354,811	879	311,837,070	16,356	136,738	234,429	7,132
1959 . . . . .	62,802	5,931	372,476	806	300,325,159	7,189	151,696	227,969	6,729
1955-59 Average . . . .	62,698	5,769	360,725	809	292,622,011	5,620	92,319	275,026	8,617
1960 . . . . .	63,805	6,091	388,648	756	293,694,263	443	159,048	230,043	6,587
1961 . . . . .	61,719	7,342	453,125	945	428,148,414	2,027	104,573	350,579	9,720
1962 . . . . .	60,355	7,188	433,819	960	416,256,985	186	157,027	276,978	7,455
1963 . . . . .	60,540	7,312	442,682	990	438,343,258	71	142,351	300,402	7,808
1964 . . . . .	61,142	7,278	444,971	1,055	469,398,146	71	155,776	289,266	7,280
1960-64 Average . . . .	61,512	7,034	432,649	946	409,168,213	560	143,755	289,454	7,762
1965 . . . . .	45,023	12,303	553,938	1,082	599,560,520	112	165,040	389,010	9,479
1966 . . . . .	45,246	12,271	555,213	1,063	590,279,481	78	231,145	324,146	7,648
1967 . . . . .	46,173	13,405	618,956	1,030	637,671,531	28	215,600	403,384	9,215
1968 . . . . .	52,338	12,795	669,677	1,060	709,705,208	91	293,909	375,859	8,314
1969 . . . . .	55,164	12,960	714,912	1,108	791,945,420	556	279,031	436,437	9,347
1965-69 Average . . . .	48,789	12,760	622,539	1,070	665,832,432	173	236,945	385,767	8,803
1970 . . . . .	63,721	14,486	923,063	1,186	1,094,869,132	25	367,297	555,791	10,963
1971 . . . . .	61,384	15,290	938,584	1,377	1,292,688,114	84	330,882	607,786	11,586
1972 . . . . .	71,714	16,785	1,203,702	1,514	1,821,931,623	1,627	332,283	873,046	16,083
1973 . . . . .	69,408	15,719	1,091,001	1,640	1,789,509,818	356	424,802	666,555	11,867
1974 . . . . .	62,577	17,911	1,120,846	1,989	2,229,319,300	877	306,103	815,620	14,033
1970-74 Average . . . .	65,761	16,050	1,055,439	1,559	1,645,663,597	594	352,273	703,760	12,950

See footnotes at end of table.

Continued—

Table 2.-Tomatoes: Mexico's Area, Yields, Production, Price, Value, Foreign Trade, and Consumption, 1975-79-Continued

Year	Area Harvested	Yields Avg./Ha.	Production	Price, Avg. Grower	Value of Production	Foreign Trade		Consumption	
						Imports	Exports	National	Per capita
	HA	Kg	MT	Pesos/MT	Pesos	MT	MT	MT	Kg
1975	59,361	17,796	1,056,408	2,498	2,639,279,660	23	330,496	725,930	12,069
1976	48,359	16,684	806,831	4,069	3,282,807,740	195	361,738	454,086	7,285
1977	61,695	15,792	974,258	4,858	4,732,945,300	-	419,189	555,067	8,540
1978 <sup>1</sup>	59,232	18,864	1,117,360	5,677	6,343,252,700	-	-	-	-
1979 <sup>1</sup>	61,850	17,500	1,082,375	5,000	5,411,875,000	-	-	-	-
1975-79 Average	58,099	17,340	1,007,446	4,420	4,482,032,080	-	-	-	-

-Denotes not available, unknown, or insignificant.

<sup>1</sup> Preliminary.

Source: Dirección General de Economía Agrícola (DGEA), Secretaría de Agricultura de Recursos Hídricos (SARH).

April 1980

Commodity Programs, FAS, USDA

Table 3.—Green Peppers: Mexico's Area, Yield, Production, Price, Value, Foreign Trade, and Consumption, 1925-79

Year	Area Harvested	Yields Avg./Ha.	Production	Prices, Avg- Grower	Value of Production	Foreign Trade		Consumption	
						Imports	Exports	National	Per capita
	<i>HA</i>	<i>Kg</i>	<i>MT</i>	<i>Pesos/MT</i>	<i>Pesos</i>	<i>MT</i>	<i>MT</i>	<i>MT</i>	<i>Kg</i>
1925	9,245	1,868	17,270	150	2,596,875	—	2,162	15,108	0.970
1926	8,873	1,884	16,719	161	2,687,947	—	2,785	13,934	0.884
1927	9,971	2,034	20,282	176	3,573,443	—	4,009	16,273	1.020
1928	10,886	1,877	20,431	164	3,356,059	—	5,033	15,398	0.953
1929	8,012	1,958	15,685	158	2,472,499	—	3,009	12,676	0.775
1925-29 Average	9,397	1,924	18,077	162	2,937,365	—	3,400	14,677	0.920
1930	7,193	2,219	15,964	169	2,701,071	1	3,301	12,664	0.765
1931	7,067	2,489	17,591	157	2,753,571	3	2,596	14,998	0.891
1932	7,176	2,382	17,093	136	2,329,675	2	1,802	15,293	0.893
1933	7,234	2,387	17,265	134	2,319,551	1	698	16,568	0.951
1934	7,112	2,377	16,905	134	2,267,420	1	601	16,305	0.920
1930-34 Average	7,156	2,370	16,964	146	2,474,258	2	1,800	15,166	0.885
1935	6,387	2,747	17,545	160	2,808,313	—	1,608	15,937	0.884
1936	7,252	2,478	17,972	169	3,033,346	—	2,657	15,315	0.835
1937	10,051	1,658	16,668	180	2,994,521	1	2,375	14,294	0.766
1938	12,593	1,582	19,916	190	3,793,256	—	2,361	17,555	0.924
1939	13,949	1,719	23,980	219	5,249,861	—	945	23,035	1.192
1935-39 Average	10,046	1,913	19,216	186	3,575,859	—	1,989	17,227	0.923
1940	13,110	2,050	26,872	230	6,183,804	—	2,667	24,205	1.232
1941	14,276	2,168	30,945	240	7,412,001	—	3,845	27,100	1.342
1942	14,452	2,343	33,866	252	8,539,677	—	5,984	27,882	1.344
1943	14,742	2,135	31,480	328	10,313,830	—	5,999	25,481	1.195
1944	14,673	2,225	32,651	410	13,393,248	—	4,257	28,394	1.296
1940-44 Average	14,251	2,187	31,163	294	9,168,512	—	4,550	26,613	1.282
1945	15,786	2,382	37,607	463	17,426,957	—	9,556	28,051	1.246
1946	15,796	2,343	37,011	476	17,606,469	—	7,600	29,411	1.271
1947	15,880	2,314	36,739	488	17,924,176	—	9,509	27,230	1.145
1948	15,779	2,370	37,400	452	16,897,186	—	8,284	29,116	1.792
1949	15,838	2,372	37,568	506	19,006,937	—	4,755	32,813	1.307
1945-49 Average	15,816	2,356	37,265	477	17,772,345	—	7,941	29,324	1.233

See footnotes at end of table.

Continued—

Table 3.—Green Peppers: Mexico's Area, Yield, Production, Price, Value, Foreign Trade, and Consumption, 1925-79—Continued

Year	Area Harvested	Yields Avg./Ha.	Production	Prices, Avg. Grower	Value of Production	Foreign Trade		Consumption	
						Imports	Exports	National	Per capita
	HA	Kg	MT	Pesos/MT	Pesos	MT	MT	MT	Kg
1950 .....	16,000	2,400	38,397	533	20,446,723	—	7,862	30,535	1,184
1951 .....	16,532	2,365	39,101	538	21,021,942	—	8,555	30,546	1,149
1952 .....	16,778	2,410	40,440	546	22,065,631	—	7,840	32,600	1,190
1953 .....	16,682	2,403	40,087	547	21,935,697	—	9,717	30,370	1,075
1954 .....	17,271	2,298	39,689	568	22,536,173	—	6,077	33,612	1,154
1950-54 Average .....	16,653	2,375	39,543	546	21,601,233	—	8,010	31,533	1,150
1955 .....	19,123	2,174	41,577	739	30,745,214	—	2,324	39,253	1,308
1956 .....	25,520	2,528	64,515	969	62,521,607	—	3,125	61,390	1,984
1957 .....	27,953	2,480	69,329	808	56,022,378	—	4,900	64,429	2,021
1958 .....	30,111	2,673	80,495	876	70,493,065	11	7,488	73,018	2,222
1959 .....	32,747	2,700	88,415	910	80,466,056	39	10,293	78,161	2,307
1955-59 Average .....	27,091	2,542	68,866	872	60,049,664	10	5,626	63,250	1,982
1960 .....	33,287	2,719	90,492	898	81,241,547	11	11,793	78,710	2,254
1961 .....	34,117	2,837	96,798	976	94,499,466	18	9,934	86,882	2,409
1962 .....	37,409	2,919	109,206	1,040	113,600,172	13	8,959	100,260	2,691
1963 .....	40,129	3,058	122,701	1,079	132,442,450	1	8,031	114,671	2,981
1964 .....	41,517	3,218	133,619	1,216	162,436,715	8	7,104	126,523	3,184
1960-64 Average .....	37,292	2,965	110,563	1,057	116,844,066	10	9,164	101,409	2,719
1965 .....	41,751	3,220	134,440	1,262	169,712,452	5	9,840	124,605	3,036
1966 .....	42,502	3,932	167,129	1,243	207,754,404	1	17,748	149,382	3,524
1967 .....	37,801	5,278	199,522	1,222	243,908,065	—	17,649	181,873	4,155
1968 .....	38,259	5,011	191,721	1,260	241,526,167	2	15,711	176,012	3,893
1969 .....	35,588	5,012	178,384	1,334	237,881,513	1	24,470	153,915	3,296
1965-69 Average .....	39,180	4,447	174,239	1,264	220,156,520	2	17,084	157,157	3,586
1970 .....	36,291	5,258	190,836	1,370	261,419,183	1	37,085	153,752	3,033
1971 .....	44,949	6,901	310,202	1,407	436,553,631	1	46,093	264,110	5,035
1972 .....	60,787	7,157	435,070	1,967	855,733,352	122	37,509	397,683	7,326
1973 .....	56,876	7,024	399,511	2,104	840,536,204	57	58,952	340,616	6,064
1974 .....	55,765	7,453	415,614	2,007	834,251,890	—	49,616	365,998	6,297
1970-74 Average .....	50,934	6,876	350,247	1,844	645,698,252	36	45,851	304,432	5,602

See footnotes at end of table.

Continued—

Table 3.—Green Peppers: Mexico's Area, Yield, Production, Price, Value, Foreign Trade, and Consumption, 1975-79—Continued

Year	Area Harvested	Yields Avg./Ha.	Production	Prices, Avg- Grower	Value of Production	Foreign Trade		Consumption	
						Imports	Exports	National	Per capita
	HA	Kg	MT	Pesos/MT	Pesos	MT	MT	MT	Kg
1975	40,189	6,797	273,149	2,955	807,044,630	—	29,349	243,800	3,997
1976	40,246	8,421	338,930	3,869	1,311,313,340	—	40,848	298,082	4,769
1977	49,821	9,668	481,682	4,492	2,163,715,500	—	53,047	428,635	6,697
1978	59,716	7,803	465,972	5,176	2,411,871,000	—	—	—	—
1979 <sup>1</sup>	52,700	9,000	474,300	6,778	3,214,805,400	—	—	—	—
1975-79 Average	48,534	8,382	406,807	4,871	1,981,749,900	—	—	—	—

— Denotes unknown, not available, or insignificant.

<sup>1</sup> Preliminary.

Source: Dirección General de Economía Agrícola, Secretaría de Agricultura y Recursos Hidráulicos (SARH).

April 1980

Commodity Programs, FAS, USDA

Table 4.—Eggplant: Mexico's Area, Yield, Production, Price, Value, Foreign Trade, and Consumption, 1932-79

Year	Area Harvested	Yields Avg./Ha.	Production	Price, Avg. Grower	Value of Production	Foreign Trade		Consumption	
						Imports	Exports	National	Per capita
	HA	Kg	MT	Pesos/MT	Pesos	MT	MT	MT	Kg
1932	37	10,784	399	127	50,680	—	12	387	0.023
1933	38	10,316	392	160	62,575	—	146	246	0.014
1934	23	9,652	222	128	28,395	—	90	132	0.007
1932-34 Average	33	10,242	338	140	47,217	—	83	255	0.015
1935	23	8,522	196	191	37,428	—	237	41	(a)
1936	27	7,741	209	245	51,256	—	146	63	0.003
1937	49	9,857	483	86	41,533	—	294	189	0.010
1938	51	10,882	555	87	48,048	—	350	205	0.011
1939	49	8,878	435	102	44,170	—	215	220	0.011
1935-39 Average	40	9,400	376	118	44,487	—	248	128	0.007
1940	52	7,904	411	140	57,404	—	247	164	0.008
1941	55	8,200	451	146	65,993	—	182	269	0.013
1942	58	8,828	512	176	90,009	—	200	312	0.015
1943	44	8,682	382	282	107,560	—	163	219	0.010
1944	54	10,352	559	489	273,440	—	—	559	0.026
1940-44 Average	53	8,736	463	257	118,881	—	158	305	0.015
1945	57	8,789	501	690	345,700	—	—	501	0.022
1946	69	8,884	613	720	441,220	—	—	613	0.026
1947	75	8,413	631	892	562,700	—	—	631	0.027
1948	80	8,750	700	857	600,068	—	—	700	0.029
1949	83	8,795	730	829	605,024	—	—	730	0.029
1945-49 Average	73	8,699	635	805	510,942	—	—	635	0.027
1950	85	8,824	750	835	625,966	—	—	750	0.029
1951	83	8,675	720	845	608,361	—	—	720	0.027
1952	86	8,186	704	859	604,590	—	—	704	0.026
1953	113	8,115	917	870	797,900	—	—	917	0.032
1954	104	7,875	819	916	750,250	—	—	819	0.028
1950-54 Average	94	8,319	782	866	677,413	—	—	782	0.028
1955	68	8,147	554	1,005	557,005	—	23	531	0.013
1956	51	8,275	422	1,047	441,877	—	59	363	0.012
1957	48	7,979	383	671	256,882	—	—	383	0.012
1958	45	8,289	373	724	270,216	—	—	373	0.011
1959	144	8,576	1,235	796	982,548	—	1,159	76	0.002
1955-59 Average	71	8,352	593	846	501,706	—	248	345	0.010

Continued—

See footnotes at end of table.

Table 4.-Eggplant: Mexico's Area, Yield, Production, Price, Value, Foreign Trade, and Consumption, 1932-79--Continued

Year	Area Harvested	Yields Avg./Ha.	Production	Price, Avg. Grower	Value of Production	Foreign Trade		Consumption	
						Imports	Exports	National	Per capita
	HA	Kg	MT	Pesos/MT	Pesos	MT	MT	MT	Kg
1960	148	8,581	1,270	917	1,164,301	-	1,155	115	0.003
1961	383	8,394	3,215	969	3,115,010	-	1,124	2,091	0.058
1962	392	8,360	3,277	1,168	3,826,008	-	1,317	1,960	0.053
1963	442	8,287	3,663	1,266	4,636,304	-	1,687	1,976	0.051
1964	467	8,358	3,903	1,277	4,982,764	-	1,987	1,916	0.048
1960/64 Average	366	8,377	3,066	1,156	3,544,877	-	1,454	1,612	0.043
1965	545	8,360	4,556	1,286	5,857,806	-	2,223	2,333	0.057
1966	584	8,351	4,877	1,317	6,421,528	-	3,430	1,447	0.034
1967	652	8,428	5,495	1,315	7,226,445	-	4,698	797	0.018
1968	906	8,719	7,899	1,324	10,462,034	-	7,065	834	0.018
1969	1,027	15,611	16,032	1,350	21,641,185	-	11,404	4,628	0.099
1965/69 Average	743	10,460	7,772	1,328	10,321,800	-	5,764	2,008	0.046
1970	1,040	16,442	17,100	1,302	22,266,074	-	13,802	3,298	0.065
1971	684	21,273	14,551	1,494	21,746,084	-	13,744	807	0.015
1972	1,065	19,089	20,330	2,965	60,279,434	-	18,730	1,600	0.029
1973	1,335	18,602	24,834	2,842	70,577,941	-	23,629	1,205	0.021
1974	1,165	19,421	22,625	2,766	62,575,000	-	16,657	5,968	0.103
1970/74 Average	1,058	18,798	19,888	2,388	44,488,907	-	17,312	2,576	0.047
1975	990	19,500	19,305	3,840	61,872,525	-	17,552	1,753	0.029
1976	698	22,372	15,616	4,661	72,793,700	-	19,176	-	-
1977	443	31,273	13,854	3,085	42,795,006	-	-	-	-
1978	1,088	21,421	23,306	7,219	168,246,000	-	-	-	-
1979	1,200	22,500	27,000	7,390	198,450,000	-	-	-	-
1975/79 Average	884	22,416	19,816	5,492	108,832,000	-	-	-	-

- Denotes unknown, not available, or insignificant.

1 Preliminary.

Source: Dirección General de Economía Agrícola, Secretaría de Agricultura y Recursos Hidráulicos (SARH).

April 1980

Commodity Programs, FAS, USDA



Table 5.—Cucumbers: Mexico's Area, Yield, Production, Grower Prices, Exports, and Consumption 1970/71-1978/79

Year Oct.-Sept.	Area Harvested	Yield Average	Production	Grower Prices	Exports	Consumption	
						National	Per capita
	<i>HA</i>	<i>MT/HA</i>	<i>MT</i>	<i>Pesos/Kg</i>	<i>MT</i>	<i>MT</i>	<i>Kg</i>
1970/71 . . . . .	13,189	10.20	134,526	1.30	67,273	67,253	1.342
1971/72 . . . . .	17,527	8.31	145,651	1.05	65,542	80,109	1.546
1972/73 . . . . .	11,498	10.57	121,515	2.03	77,614	43,901	0.819
1973/74 . . . . .	10,187	11.12	113,255	1.81	71,687	41,568	0.750
1974/75 . . . . .	10,592	8.06	85,381	2.21	42,114	43,267	0.753
1975/76 . . . . .	12,599	8.47	106,760	3.81	73,754	33,006	0.55
1976/77 . . . . .	6,716	19.05	127,957	2.04	76,548	51,409	0.82
1977/78 <sup>1</sup> . . . . .	7,301	19.73	144,072	5.91	<sup>2</sup> 80,000	64,072	0.98
1978/79 <sup>1</sup> . . . . .	9,500	20.00	190,000	6.18	<sup>2</sup> 80,000	90,000	7.34

<sup>1</sup> Preliminary.<sup>2</sup> Estimated.

Source: Unión Nacional de Productores de Hortalizas (UNPH), and Dirección General de Economía Agrícola (DGEA), Secretaría de Agricultura y Recursos Hidráulicos (SARH).

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Table 6.—Squash: Mexico's Area, Yield, Production, Grower Prices, Exports, and Consumption 1970/71-1978/79

Year Oct.-Sept.	Area Harvested	Yield Average	Production	Grower Price	Exports	Consumption	
						National	Per capita
	<i>HA</i>	<i>MT/HA</i>	<i>MT</i>	<i>Pesos/Kg</i>	<i>MT</i>	<i>MT</i>	<i>Kg</i>
1970/71 . . . . .	—	—	24,902	—	13,984	10,918	0.218
1971/72 . . . . .	—	—	33,232	—	16,616	16,616	.321
1972/73 . . . . .	—	—	43,632	—	17,453	26,179	.488
1973/74 . . . . .	4,388	9.86	43,266	1.81	21,149	22,117	.399
1974/75 . . . . .	4,955	9.68	47,986	2.48	17,700	30,286	.528
1975/76 . . . . .	4,969	11.04	54,868	2.85	21,872	32,988	.555
1976/77 . . . . .	4,530	13.76	62,333	2.35	29,979	32,354	.526
1977/78 <sup>1</sup> . . . . .	4,000	16.74	66,946	2.50	33,849	33,097	.525
1978/79 <sup>1</sup> . . . . .	4,000	17.98	71,900	3.00	43,957	27,947	.430

— Not available or unknown.

<sup>1</sup> Preliminary.

Source: Unión Nacional de Productores de Hortalizas (UNPH), and Dirección General de Economía Agrícola (DGEA), Secretaría de Agricultura y Recursos Hidráulicos (SARH).

April 1980

Commodity Programs, FAS, USDA

Table 7.-Tomatoes: Mexico's Area, Yields, and Production in the Northwestern States, 1960-1979

Year	Area			Yields			Production					
	Baja Calif.	Sinaloa <sup>1</sup>	Sonora	Total	Baja Calif.	Sinaloa <sup>1</sup>	Sonora	Average	Baja Calif.	Sinaloa <sup>1</sup>	Sonora	Total
	--	--	--	--	--	Boxes (10 kilograms) per hectare		--	--	Metric tons		
1960	803	22,192	6,115	29,110	544	657	583	638	4,369	145,799	35,622	185,790
1961	821	22,383	6,166	29,370	764	874	617	817	6,275	195,543	38,036	239,854
1962	831	21,863	5,779	28,473	702	853	617	800	5,834	186,423	35,650	227,907
1963	716	18,916	2,895	22,527	714	892	619	851	5,113	168,755	17,934	191,802
1964	623	18,697	2,643	21,963	719	890	620	853	4,479	166,468	16,395	187,342
1960-64 Average.	758	20,810	4,720	26,288	688	829	609	786	5,214	172,598	28,727	206,539
1965	355	12,915	1,314	14,584	1,341	1,647	934	1,575	4,762	212,723	12,268	229,753
1966	429	11,385	1,432	13,246	1,358	1,802	945	1,695	5,824	205,196	13,530	224,550
1967	739	10,363	545	11,647	1,327	2,191	2,123	2,133	9,804	227,074	11,571	248,449
1968	890	10,870	603	12,363	1,596	2,091	2,306	2,066	14,208	227,317	13,904	255,429
1969	810	12,086	958	13,854	907	2,371	1,412	2,219	7,350	286,534	13,530	307,414
1965-69 Average	645	11,524	970	13,139	1,301	2,011	1,336	1,926	8,390	231,769	12,961	253,119
1970	781	14,358	2,425	17,564	1,225	2,362	1,800	2,234	9,566	339,157	43,650	392,373
1971	1,380	13,010	1,068	15,458	2,359	2,417	1,200	2,327	32,550	314,416	12,816	359,782
1972	1,603	18,876	633	21,112	2,823	1,683	2,570	1,796	45,252	317,737	16,265	379,254
1973	1,774	20,745	879	23,398	2,851	2,132	2,894	2,215	50,570	442,245	25,442	518,257
1974	1,159	14,697	630	16,486	3,446	2,305	2,671	2,399	39,944	338,750	16,828	395,522
1970-74 Average.	1,339	16,337	1,127	18,804	2,657	2,145	2,041	2,175	35,576	350,461	23,000	409,038
1975	2,063	12,995	440	15,498	3,951	2,567	3,000	2,774	81,519	333,568	13,200	428,287
1976	2,349	13,083	424	15,856	4,033	3,303	3,000	3,402	94,730	432,109	12,720	539,559
1977	2,627	15,470	1,119	19,216	3,427	2,884	1,996	2,906	90,030	446,115	22,338	558,483
1978 <sup>2</sup>	3,000	13,826	1,000	17,826	3,333	3,645	2,500	3,528	100,000	503,973	25,000	628,973
1979 <sup>3</sup>	3,300	13,500	1,000	17,800	3,636	3,333	2,000	3,315	120,000	450,000	20,000	590,000
1975-79 Average	2,668	13,775	797	17,239	3,645	3,144	2,340	3,187	97,256	433,153	18,652	549,060

Note: Yields jumped sharply in 1965-69 because of the change over to staked culture.

<sup>1</sup> Does not include cherry tomatoes.

<sup>2</sup> Preliminary.

<sup>3</sup> Estimate.

Source: Sinaloa-Confederación de Asociaciones Agrícolas de Estado de Sinaloa (CAADES), Baja California and Sonora-Unión Nacional de Productores de Hortalizas (UNPH), and Secretaría de Agricultura y Recursos Hidráulicos (SARH).

Commodity Programs, FAS, USDA

April 1980

Table 8.—Tomatoes: Average Grower Prices and Crop Values in Baja California, Sinaloa, and Sonora, 1960-79

Year	Grower prices										Value of crop			
	Pesos					Dollars					Dollars			
	Baja Calif.	Sinaloa	Sonora	Avg. <sup>1</sup>	Baja Calif.	Sinaloa	Sonora	Avg. <sup>1</sup>	Baja Calif.	Sinaloa	Sonora	Total		
	--- Mexican Pesos per kilogram ---					--- U.S. Dollars per Std. Box <sup>2</sup> ---					--- Million U.S. Dollars ---			
1960	0.96	0.84	1.00	0.55	0.77	0.67	0.80	0.69	0.3	9.8	2.8	12.9		
1961	1.28	0.94	1.19	0.99	1.02	0.75	0.95	0.79	0.6	14.7	3.6	18.9		
1962	1.20	1.01	1.00	1.01	0.96	0.81	0.80	0.81	0.5	15.1	2.9	18.5		
1963	1.25	1.05	1.05	1.05	1.00	0.84	0.84	0.84	0.5	14.2	1.5	16.2		
1964	1.26	1.08	1.09	1.10	1.01	0.86	0.87	0.88	0.5	14.3	1.7	16.5		
1960-64 Average	1.25	1.00	1.10	1.03	1.00	0.80	0.88	0.82	0.5	14.7	2.7	17.9		
1965	1.30	1.10	1.10	1.10	1.04	0.88	0.88	0.88	0.5	18.7	1.1	20.3		
1966	1.30	1.10	1.10	1.11	1.04	0.88	0.88	0.89	0.6	18.1	1.2	19.9		
1967	1.24	1.10	1.12	1.11	0.99	0.88	0.90	0.89	1.0	20.0	1.0	22.0		
1968	1.25	1.12	1.14	1.13	1.00	0.90	0.91	0.90	1.4	20.5	1.3	23.2		
1969	1.30	1.15	1.15	1.15	1.04	0.92	0.92	0.92	0.8	26.4	1.2	28.4		
1965-69 Average	1.28	1.11	1.12	1.12	1.02	0.89	0.90	0.90	0.9	20.7	1.2	22.8		
1970	1.56	1.20	1.20	1.21	1.25	0.96	0.96	0.97	1.2	32.6	4.2	38.0		
1971	1.30	1.37	1.20	1.36	1.04	1.10	0.96	1.09	3.4	34.6	1.4	39.4		
1972	0.61	2.41	1.17	2.20	0.49	1.93	0.94	1.76	2.2	61.3	3.1	66.6		
1973	1.10	2.54	1.33	2.41	0.88	2.03	1.06	1.93	4.8	89.8	5.2	99.8		
1974	1.89	2.50	1.30	2.39	1.51	2.00	1.04	1.91	6.1	67.8	1.8	75.7		
1970-74 Average	1.29	2.00	1.24	1.91	1.03	1.60	0.99	1.53	3.5	57.2	3.1	63.9		
1975	1.58	3.93	1.50	3.40	1.26	3.14	1.20	2.72	10.3	104.7	1.6	116.6		
1976	5.27	6.40	1.50	6.08	2.32	2.82	0.66	2.68	22.1	121.9	0.8	144.8		
1977	4.19	8.78	4.14	7.86	1.85	3.87	1.82	3.46	16.7	172.6	4.1	193.4		
1978 <sup>3</sup>	6.00	9.00	5.00	8.35	2.64	3.96	2.20	3.68	26.4	199.6	5.5	231.5		
1979 <sup>4</sup>	7.00	10.00	6.00	9.26	3.07	4.39	2.63	4.06	36.8	197.6	5.3	239.7		
1975-79 Average	4.81	7.62	3.63	6.99	2.23	3.64	1.70	3.32	22.5	159.3	3.4	185.2		

NOTE: 1 U.S. Dollar equalled: 12.5 Pesos prior to 1976, 22.7 Pesos during 1976-78 and 22.8 Pesos in 1979.

NOTE: 1 U.S. Dollar equalled: 12.5 Pesos prior to 1976, 22.7 Pesos during 1976-78, and 22.8 Pesos in 1979.

<sup>1</sup> Weighted average, by quantity. <sup>2</sup> Standard 2-layer box of 10 kilograms (22 pounds) net weight. <sup>3</sup> Preliminary. <sup>4</sup> Estimate.

Source: Confederación de Asociaciones Agrícolas de Estado de Sinaloa (CAADES), Unión Nacional de Productores de Hortalizas (UNPH), and Secretaría de Agricultura y Recursos Hidráulicos (SARH).

May 1980

Commodity Programs, FAS, USDA

Table 9.—Mexico: Tomato Area by State, 1960-77

(Hectares)

Year	Baja California		Guanajuato	Michoacan	Morelos	Nayarit	San Luis Potosi	Sinaloa	Sonora	Tamaulipas	Veracruz	Total <sup>1</sup>
	Norte	Sur										
1960	670	133	3,945	2,023	1,502	807	1,458	22,192	6,115	9,418	3,048	63,805
1961	680	141	4,376	2,173	1,592	887	1,599	22,383	6,166	5,179	3,221	61,719
1962	700	131	4,461	1,921	1,820	911	1,637	21,863	5,779	5,320	2,938	60,355
1963	587	129	5,177	1,880	3,375	1,034	2,846	18,916	2,895	6,442	3,662	60,540
1964	505	118	5,722	2,101	3,387	1,056	2,798	18,697	2,643	6,310	3,498	61,142
1965	300	55	3,600	1,602	6,335	1,191	855	12,915	1,314	941	2,141	45,023
1966	372	57	3,447	1,914	6,586	1,889	938	12,815	1,432	925	1,800	45,246
1967	634	105	7,123	1,217	6,486	479	1,897	10,899	545	979	4,145	46,173
1968	865	25	8,125	1,259	8,341	839	1,846	11,481	603	2,026	5,624	52,338
1969	785	25	8,043	1,122	8,164	613	2,046	13,644	958	2,052	5,174	55,164
1970	756	25	8,445	1,299	11,457	698	2,006	15,372	2,425	1,999	5,514	63,721
1971	1,350	30	8,150	1,651	8,609	1,097	2,000	13,845	1,068	2,189	5,286	61,384
1972	1,568	35	9,000	1,966	9,068	689	2,700	21,638	633	2,704	2,528	71,714
1973	1,724	50	8,320	3,104	7,038	627	2,700	21,911	879	2,017	4,419	69,408
1974	1,047	112	12,500	3,047	7,786	750	2,800	16,457	630	1,527	870	62,577
1975	1,953	110	6,500	2,810	8,055	928	2,550	17,361	440	2,338	950	59,361
1976	2,208	141	2,750	1,805	6,358	915	1,975	14,721	424	1,045	1,035	48,359
1977	2,417	210	6,600	3,169	6,494	913	4,000	17,326	1,119	1,847	1,441	61,695
1978 <sup>2</sup>	2,700	300	6,600	3,200	6,500	1,000	4,000	17,300	1,000	1,800	1,400	59,232
1979 <sup>3</sup>	3,000	300	6,600	3,200	6,500	1,000	4,000	17,300	1,000	1,800	1,400	61,850

<sup>1</sup> Includes other states. <sup>2</sup> Preliminary. <sup>3</sup> Estimate.

Source: Dirección General de Economía Agrícola (DGEA), Secretaría de Agricultura y Recursos Hidráulicos (SARH).

May 1980

Commodity Programs, FAS, USDA

Table 10.—Mexico: Tomato Yields by State, 1960-77

(Metric tons per hectare)

Year	Baja California		Guanajuato	Michoacan	Morelos	Nayarit	San Luis Potosi	Sinaloa	Sonora	Tamaulipas	Veracruz	Average <sup>1</sup>
	Norte	Sur										
1960	5.29	6.17	5.92	5.46	6.35	6.17	5.81	6.57	5.83	6.41	5.61	6.09
1961	7.88	6.49	6.41	6.09	6.55	6.36	6.44	8.74	6.17	8.63	5.86	7.34
1962	7.00	7.13	6.33	6.05	5.97	6.23	6.44	8.53	6.17	8.35	5.91	7.19
1963	7.16	7.04	6.36	6.65	6.22	6.22	6.72	8.92	6.19	8.29	5.85	7.31
1964	7.24	6.96	6.33	6.54	6.20	6.27	6.69	8.90	6.20	8.24	5.86	7.28
1965	14.57	7.13	29.88	6.52	9.88	6.38	6.88	16.47	9.34	8.24	5.86	12.30
1966	14.58	7.04	29.99	6.63	9.99	6.50	7.00	16.45	9.45	8.23	5.82	12.27
1967	14.21	7.57	20.58	5.14	8.92	3.86	4.29	22.02	21.23	9.54	7.79	13.41
1968	16.13	10.24	18.26	5.49	8.07	4.19	10.12	20.62	23.06	10.03	5.80	12.80
1969	9.04	10.00	18.38	6.06	7.93	4.96	8.00	21.80	14.12	9.90	5.09	12.96
1970	12.32	10.10	17.51	7.89	13.24	5.03	11.47	22.33	18.00	8.75	5.17	14.49
1971	24.00	10.00	18.33	12.11	17.41	7.85	15.00	24.00	12.00	8.06	3.14	15.29
1972	28.64	10.00	18.76	14.76	19.20	8.15	16.82	21.50	25.70	7.93	14.74	16.79
1973	29.04	10.00	20.38	12.38	17.94	8.05	15.00	18.00	28.94	10.68	6.61	15.72
1974	36.68	13.71	23.40	17.50	20.53	9.77	16.50	18.00	26.71	9.42	11.14	17.91
1975	40.97	13.64	24.23	8.12	23.72	10.53	15.85	18.50	30.00	7.23	8.58	17.80
1976	40.99	30.00	24.09	12.95	19.97	11.75	13.00	16.36	30.00	11.99	7.87	16.68
1977	35.48	20.40	24.61	13.87	20.68	10.41	15.00	16.00	19.96	7.88	7.08	15.79
1978 <sup>2</sup>	34.81	20.00	21.21	15.63	20.00	11.11	15.00	21.67	25.00	8.33	7.14	18.86
1979 <sup>3</sup>	37.00	30.00	22.73	15.63	21.54	8.88	12.50	18.79	20.00	8.33	7.14	17.50

<sup>1</sup> Includes other states. <sup>2</sup> Preliminary. <sup>3</sup> Estimate.

Source: Dirección General de Economía Agrícola (DGEA), Secretaría de Agricultura y Recursos Hidráulicos (SARH).

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Commodity Programs, FAS/USDA

Table 11.—Mexico: Tomato Production by State, 1960-77

(Metric tons)

Year	Baja California		Guanajuato	Michoacan	Morelos	Nayarit	San Luis Potosí	Sinaloa	Sonora	Tamaulipas	Veracruz	Total <sup>1</sup>
	Norte	Sur										
1960	3,546	821	23,356	11,049	9,541	4,977	8,468	145,799	35,622	60,366	17,099	388,648
1961	5,360	915	28,064	13,236	10,429	5,642	10,297	195,543	38,036	44,667	18,866	453,125
1962	4,900	934	28,256	11,612	10,873	5,673	10,540	186,423	35,650	44,413	17,356	433,819
1963	4,205	908	32,908	12,499	20,975	6,436	19,136	168,755	17,934	53,395	21,431	442,682
1964	3,658	821	36,232	13,735	20,992	6,626	18,730	166,468	16,395	52,009	20,512	444,971
1965	4,370	392	107,554	10,448	62,564	7,603	5,882	212,723	12,268	7,749	12,536	553,938
1966	5,423	401	103,365	12,696	65,774	12,269	6,561	210,820	13,530	7,608	10,481	555,213
1967	9,009	795	146,584	6,259	57,849	1,848	8,136	240,007	11,571	9,336	32,269	618,956
1968	13,952	256	148,354	6,910	67,270	3,513	18,687	236,773	13,904	20,327	32,597	669,677
1969	7,100	250	147,790	6,797	64,732	3,039	16,368	297,412	13,530	20,319	26,336	714,912
1970	9,314	252	147,855	10,253	151,679	3,510	23,013	343,257	43,650	17,491	28,480	923,063
1971	32,250	300	149,349	19,990	149,909	8,610	30,000	332,280	12,816	17,635	16,603	938,584
1972	44,902	350	168,876	29,027	172,294	5,612	45,401	465,217	16,265	21,436	37,262	1,203,702
1973	50,070	500	169,520	38,420	126,251	5,046	40,500	394,398	25,442	21,554	29,192	1,091,001
1974	38,408	1,536	292,500	53,327	159,847	7,325	46,200	296,226	16,828	14,386	9,691	1,120,846
1975	80,019	1,500	157,500	22,807	191,082	9,770	40,425	321,178	13,200	16,913	8,150	1,056,408
1976	90,500	4,230	66,250	23,368	126,996	10,750	25,675	240,832	12,720	12,527	8,145	806,831
1977	85,745	4,285	139,577	44,536	120,831	9,503	60,000	277,036	22,338	14,561	10,848	974,258
1978 <sup>2</sup>	94,000	6,000	140,000	50,000	130,000	10,000	60,000	375,000	25,000	15,000	10,000	1,117,360
1979 <sup>3</sup>	111,000	9,000	150,000	50,000	140,000	8,000	50,000	325,000	20,000	15,000	10,000	1,082,375

<sup>1</sup> Includes other states. <sup>2</sup> Preliminary. <sup>3</sup> Estimate.Source: Dirección General de Economía Agrícola (DGEA), Secretaría de Agricultura y Recursos Hidráulicos (SARH).  
May 1980

Commodity Programs, FAS/USDA

Table 12.—Mexico: Average Grower Prices for Tomatoes, by State, 1960-79  
(Pesos per kilogram)<sup>1</sup>

Year	Baja California		Guanajuato	Michoacan	Morelos	Nayarit	San Luis Potosí	Sinaloa	Sonora	Tamaulipas	Veracruz	Average Mexico <sup>2</sup>
	Norte	Sur										
1960	0.95	1.01	0.65	0.60	0.70	0.52	0.59	0.84	1.00	0.60	0.85	0.76
1961	1.30	1.19	0.91	0.86	0.88	0.89	0.85	0.94	1.19	0.83	0.93	0.95
1962	1.20	1.21	0.87	0.90	0.96	0.94	0.85	1.01	1.00	0.85	0.84	0.96
1963	1.25	1.27	0.90	0.95	1.00	0.98	0.90	1.05	1.05	0.90	0.88	0.99
1964	1.25	1.28	1.00	1.00	1.11	1.07	1.00	1.08	1.09	1.00	0.99	1.05
1965	1.30	1.26	1.05	1.04	1.08	1.09	1.03	1.10	1.10	1.05	1.04	1.08
1966	1.30	1.24	0.95	0.93	1.13	1.00	1.00	1.10	1.10	1.00	1.00	1.06
1967	1.24	1.26	0.90	0.90	1.03	0.95	1.00	1.10	1.12	0.98	1.00	1.03
1968	1.25	1.28	0.95	0.95	1.06	1.00	1.02	1.12	1.14	1.00	1.02	1.06
1969	1.30	1.30	1.00	0.95	1.10	1.20	1.05	1.15	1.15	1.00	1.05	1.11
1970	1.57	1.40	1.10	0.97	1.22	1.24	1.05	1.20	1.20	1.00	1.20	1.19
1971	1.30	1.50	1.73	1.24	1.25	1.53	1.11	1.37	1.20	1.10	1.45	1.38
1972	0.60	1.30	1.05	1.00	0.70	0.84	0.97	2.41	1.17	0.98	1.08	1.51
1973	1.05	1.65	0.70	1.21	1.56	1.12	0.90	2.54	1.33	1.10	1.22	1.64
1974	1.85	3.02	1.69	2.77	1.92	1.08	1.88	2.50	1.30	1.00	1.04	1.99
1975	1.55	3.00	1.23	2.78	2.59	1.12	1.50	3.93	1.50	1.80	1.10	2.50
1976	5.38	3.00	3.83	2.26	2.00	1.68	1.50	6.40	1.50	1.80	2.20	4.07
1977	4.26	2.81	2.95	2.88	4.11	3.12	1.70	8.78	4.14	2.40	2.18	4.86
1978 <sup>3</sup>	6.00	5.50	3.00	3.00	4.50	3.50	2.00	9.00	5.00	2.50	2.50	5.68
1979 <sup>4</sup>	7.00	6.50	4.00	3.50	5.00	4.50	2.50	10.00	6.00	3.00	3.00	6.00

<sup>1</sup> 1961-76, 12.5 pesos = \$1; 1976-78, 22.7 pesos = \$1; 1979, 22.8 pesos = \$1. <sup>2</sup> Average weighted by production in all states. <sup>3</sup> Preliminary. <sup>4</sup> Estimate.Source: Dirección General de Economía Agrícola (DGEA), Secretaría de Agricultura y Recursos Hidráulicos (SARH).  
May 1980

Commodity Programs, FAS, USDA

Table 13.—Sweet Bell Peppers: Mexico's Area Harvested by States, 1960-79  
(In hectares)

Year	Baja California		Chi- huahua	Guan- ajuato	Jalisco	Nayarit	San Luis Potosí	Sinaloa	Sonora	Tam- aulipas	Ver- acruz	Total Mexico <sup>1</sup>
	Norte	Sur										
1960	740	190	830	2,800	680	790	1,281	5,000	601	3,372	4,853	33,287
1961	665	211	933	2,855	656	885	1,212	5,088	751	3,343	5,128	34,117
1962	720	212	22	2,900	623	826	1,623	6,598	687	3,358	5,282	37,409
1963	675	204	1,300	2,931	662	997	1,938	6,803	949	3,340	6,159	40,129
1964	474	123	1,530	3,016	656	1,351	1,846	6,423	1,836	1,941	6,950	41,157
1965	765	198	987	1,211	678	1,708	1,519	5,432	168	2,823	12,659	41,751
1966	1,287	201	819	2,139	952	3,236	1,384	5,123	324	2,134	11,435	42,502
1967	1,759	213	262	3,934	987	2,185	1,259	2,863	895	1,543	7,261	37,801
1968	2,233	234	268	3,543	1,011	2,149	1,543	1,834	895	2,011	7,457	38,259
1969	1,980	259	298	3,150	1,065	2,184	1,278	2,493	549	1,850	5,801	35,588
1970	2,250	299	351	3,469	1,085	2,150	1,250	2,721	725	1,674	5,925	36,291
1971	1,475	120	1,300	2,679	1,250	4,113	1,500	5,675	1,521	1,500	8,640	44,949
1972	1,857	250	1,729	3,750	420	3,563	2,250	5,749	1,381	2,500	19,788	60,787
1973	2,000	250	2,163	3,800	2,500	2,305	2,250	5,167	792	3,084	16,585	56,876
1974	1,800	270	1,462	5,924	3,872	3,380	1,000	4,300	1,520	3,279	10,600	55,765
1975	1,500	323	2,000	2,500	2,620	1,585	1,570	2,347	1,175	1,627	7,100	40,189
1976	1,500	256	3,893	3,500	3,600	2,256	1,903	2,869	1,147	640	4,100	40,246
1977	1,800	363	4,638	3,500	566	2,838	3,200	3,290	2,403	712	3,850	49,821
1978 <sup>2</sup>	2,000	400	4,000	4,000	500	3,000	3,500	3,500	2,500	800	4,000	59,716
1979 <sup>2</sup>	2,000	400	4,000	3,500	500	3,000	3,000	3,300	2,400	700	3,500	52,700

<sup>1</sup> Includes other states. <sup>2</sup> Preliminary.

Source: Dirección General de Economía Agrícola, Secretaría de Agricultura y Recursos Hidráulicos (DGEA, SARH), and Unión Nacional de Productores de Hortalizas (UNPH).

April 1980

Commodity Programs, FAS, USDA

Table 14.—Sweet Bell Peppers: Mexico's Yields by States, 1960-79  
(In metric tons per hectare)

Year	Baja California		Chihuahua	Guerrero	Jalisco	Nayarit	San Luis Potosí	Sinaloa	Sonora	Tamaulipas	Veracruz	Total Mexico <sup>1</sup>
	Norte	Sur										
1960	3.0	3.0	2.8	2.7	2.5	2.9	2.5	3.2	3.1	2.9	2.5	2.7
1961	2.7	3.2	2.8	3.1	2.7	3.1	2.4	3.2	3.4	3.0	2.6	2.8
1962	2.7	2.3	3.2	3.2	2.8	3.4	2.3	3.2	3.2	3.0	2.8	2.9
1963	2.7	3.2	3.3	3.3	3.0	2.9	2.9	3.3	3.4	2.9	3.0	3.1
1964	3.5	3.1	3.2	3.5	3.2	2.9	3.1	3.4	3.9	2.9	3.0	3.2
1965												
1966	2.8	3.1	2.3	7.0	2.8	3.5	4.4	3.1	4.0	2.6	3.4	3.2
1967	2.8	2.5	2.1	7.0	3.9	4.0	4.4	3.0	3.1	2.6	5.7	3.9
1968	8.6	8.6	3.8	8.7	3.9	4.3	4.7	4.1	9.0	5.0	8.5	5.3
1969	8.7	8.8	3.5	8.8	3.0	4.1	5.0	5.7	8.9	6.8	6.2	5.0
1970	9.3	9.5	3.6	8.9	3.0	4.0	3.0	7.6	6.7	6.9	5.2	5.0
1971	9.4	10.0	3.7	9.3	3.4	4.1	3.1	7.6	8.0	4.1	5.2	5.3
1972	12.0	15.0	8.1	12.0	4.2	6.3	8.0	9.8	14.0	4.8	6.3	6.9
1973	12.0	15.0	12.3	13.0	8.0	9.5	8.0	9.0	13.9	5.2	6.0	7.2
1974	8.4	13.0	8.0	13.5	6.4	8.7	12.5	7.50	13.1	5.1	6.7	7.0
1975	10.0	11.1	8.7	11.9	7.9	7.8	12.5	9.3	13.1	4.8	7.3	7.5
1976	8.0	18.1	11.8	12.0	8.0	9.1	15.0	10.7	13.7	2.1	5.0	6.8
1977	10.0	25.1	12.0	12.0	8.0	10.2	12.5	12.2	19.0	8.0	9.0	8.4
1978 <sup>2</sup>	12.0	26.9	20.0	10.5	7.5	10.4	12.5	16.9	8.7	9.1	5.0	9.7
1979 <sup>2</sup>	12.0	25.0	20.0	10.0	8.0	10.0	11.4	17.1	10.0	8.8	5.0	7.8
1979 <sup>2</sup>	10.0	20.0	20.0	11.4	8.0	10.0	7.5	15.2	8.3	10.0	5.7	9.0

<sup>1</sup> Includes other states. <sup>2</sup> Preliminary.

Source: Dirección General de Economía Agrícola, Secretaría de Agricultura y Recursos Hidráulicos (DGEA, SARH), and Unión Nacional de Productores Hidráulicos (UNPH).

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Commodity Programs, FAS, USDA



Table 15.—Sweet Bell Peppers: Mexico Production by State, 1960-79

(In metric tons)

Year	Baja California		Chi-huahua	Guanajuato	Jalisco	Nayarit	San Luis Potosí	Sinaloa	Sonora	Tamaulipas	Veracruz	Total Mexico <sup>1</sup>
	Norte	Sur										
1960	2,216	572	2,308	7,672	1,708	2,309	3,227	16,140	1,884	9,711	12,327	90,492
1961	1,770	670	2,638	8,774	1,757	2,741	2,920	16,431	2,539	9,890	13,188	96,798
1962	1,925	684	3,616	9,336	1,744	2,842	3,807	20,933	2,168	3,939	14,628	109,206
1963	1,847	652	3,723	9,594	1,954	2,875	5,798	22,376	3,232	9,537	18,310	122,701
1964	1,657	381	4,953	12,625	2,130	3,911	5,769	21,925	7,118	5,715	21,123	133,619
1965	2,118	605	2,315	8,470	1,891	5,952	6,644	17,084	664	7,430	43,585	134,440
1966	3,588	494	1,754	14,973	3,695	12,883	6,049	15,487	994	5,521	65,305	167,129
1967	15,214	1,824	985	34,045	3,865	9,437	5,866	11,821	8,051	7,767	61,755	199,522
1968	19,378	2,051	950	31,504	3,058	8,795	7,752	10,514	7,947	13,653	45,875	191,721
1969	18,315	2,461	1,073	27,925	3,195	8,758	3,834	19,006	3,673	12,765	30,107	178,384
1970	21,195	2,990	1,277	32,192	3,711	8,707	13,813	20,598	5,800	11,762	30,810	190,836
1971	17,700	1,800	10,500	32,148	5,250	25,898	12,000	55,615	21,294	7,149	54,069	310,202
1972	22,284	3,750	21,218	48,750	3,360	33,774	18,000	51,741	19,130	13,000	120,923	435,070
1973	20,000	3,250	17,306	51,300	16,000	19,971	28,125	38,753	10,753	15,744	110,920	399,511
1974	18,000	2,984	12,766	70,474	30,600	26,300	12,500	40,000	20,015	15,780	77,450	415,614
1975	12,000	16,097	23,600	30,000	20,960	14,455	23,550	25,000	16,097	3,377	39,200	273,149
1976	15,000	6,430	46,716	42,000	28,784	22,964	23,787	35,000	21,793	5,113	36,900	338,930
1977	21,000	9,780	92,700	36,600	4,245	29,505	40,000	55,696	20,958	6,476	19,250	481,682
1978 <sup>2</sup>	24,000	10,000	80,000	40,000	4,000	30,000	40,000	60,000	25,000	7,000	20,000	465,972
1979 <sup>2</sup>	20,000	8,000	80,000	40,000	4,000	30,000	40,000	50,000	20,000	7,000	20,000	447,300

<sup>1</sup> Includes other states. <sup>2</sup> Preliminary.

Source: Dirección General de Economía Agrícola, Secretaría de Agricultura y Recursos Hidráulicos (DCEA, SARH), and Unión Nacional de Productores de Hortalizas (UNPH).

April 1980

Commodity Programs, FAS, USDA

Table 16. - Sweet Bell Peppers: Mexico's Grower Prices, by States, 1960-79  
(In pesos per kilogram)

Year	Baja California		Chihuahua	Guanajuato	Jalisco	Nayarit	San Luis Potosí	Sinaloa	Sonora	Tamaulipas	Veracruz	Total Mexico <sup>1</sup>
	Norte	Sur										
1960	0.95	0.87	0.90	0.80	0.99	0.99	0.94	0.90	0.86	0.95	0.90	0.90
1961	1.05	0.99	0.97	0.96	1.07	1.00	1.05	0.93	1.02	1.04	0.96	0.98
1962	1.10	1.12	1.01	1.05	1.14	1.09	1.04	1.04	1.13	1.08	1.01	1.04
1963	1.15	1.17	1.03	1.08	1.18	1.12	1.07	1.10	1.20	1.12	1.05	1.08
1964	1.25	1.23	1.16	1.18	1.30	1.20	1.18	1.25	1.35	1.20	1.25	1.22
1965	1.28	1.25	1.19	1.22	1.35	1.25	1.22	1.27	1.34	1.29	1.36	1.26
1966	1.50	1.25	1.22	1.35	1.25	1.15	1.20	1.24	1.30	1.25	1.25	1.24
1967	1.28	1.25	1.30	1.38	1.27	1.25	1.20	1.26	1.27	1.26	1.10	1.22
1968	1.31	1.28	1.32	1.40	1.30	1.20	1.23	1.27	1.30	1.30	1.12	1.26
1969	1.40	1.30	1.35	1.50	1.33	1.45	1.25	1.30	1.35	1.32	1.15	1.33
1970	1.50	1.40	1.30	1.50	1.35	1.50	1.26	1.40	1.30	1.32	1.16	1.37
1971	1.45	1.50	1.25	1.48	1.38	1.50	1.30	1.50	1.39	1.35	1.24	1.41
1972	1.28	1.73	1.25	1.87	2.01	1.28	1.36	5.18	2.00	1.43	1.35	1.97
1973	3.09	1.44	1.32	1.76	2.67	2.13	1.75	3.50	3.94	3.00	1.83	2.10
1974	3.00	3.00	1.54	1.49	2.51	1.55	2.00	3.00	3.13	3.00	1.27	2.01
1975	3.50	1.45	3.00	2.00	6.38	2.10	2.00	4.80	1.45	2.80	1.50	2.95
1976	4.00	2.88	3.50	4.00	4.20	7.10	1.50	7.70	2.20	2.80	2.00	3.87
1977	5.00	2.85	2.00	6.00	4.35	3.50	1.80	12.03	10.98	3.10	3.50	4.49
1978 <sup>2</sup>	5.00	3.00	3.00	6.00	4.50	4.00	2.00	10.00	8.00	3.50	4.00	5.18
1979 <sup>2</sup>	6.00	4.00	4.00	6.00	5.00	5.00	2.50	14.00	10.00	4.00	5.00	6.78

<sup>1</sup> Includes other states. <sup>2</sup> Preliminary.

Source: Dirección General de Economía Agrícola, Secretaría de Agricultura de Recursos Hidráulicos (DGEA, SARH), and Unión Nacional de Productores de Hortalizas (UNPH).

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Commodity Programs, FAS, USDA

Table 17.—Cucumbers: Mexico's Area, Yield, Production, and Grower Prices, By States, 1973-79

Year	States										Total Mexico <sup>1</sup>	
	Guan- ajuato	Jalisco	Mich- oacan	Morelos	Nayarit	San Luis Potosi	Sinaloa	Sonora	Tam- aulipas	Veracruz		
AREA												
Hectares												
1973	350	500	675	1,100	178	150	5,667	259	171	200	11,498	
1974	200	480	840	946	491	70	5,100	702	191	170	10,187	
1975	100	300	755	848	400	155	3,720	448	92	107	10,592	
1976	25	600	1,358	883	210	130	3,046	113	2	76	12,599	
1977	50	670	945	408	82	120	3,802	343	82	80	6,716	
1978 <sup>2</sup>	150	700	900	400	100	120	4,000	400	80	80	7,301	
1979 <sup>2</sup>	150	700	1,000	400	100	120	4,500	350	80	80	9,500	
YIELDS												
Tons Per Hectare												
1973	16.0	18.6	9.9	12.7	9.4	15.0	13.5	6.7	7.2	15.0	10.6	
1974	16.0	18.0	10.0	16.1	13.0	15.0	12.0	6.7	6.1	21.8	11.1	
1975	16.0	18.6	10.9	12.6	13.0	15.0	13.0	7.5	5.1	10.0	8.1	
1976	16.0	18.0	12.9	13.0	13.0	15.0	16.5	7.5	13.0	4.0	8.5	
1977	16.0	16.4	11.6	12.6	11.8	15.0	16.5	8.2	5.4	13.0	19.1	
1978 <sup>2</sup>	16.0	15.7	12.2	15.0	10.0	16.7	23.8	10.0	5.0	15.0	19.7	
1979 <sup>2</sup>	16.0	17.1	12.0	17.5	10.0	15.0	22.2	8.6	5.0	13.8	20.0	
PRODUCTION												
Tons												
1973	5,600	9,300	6,713	14,014	1,678	2,250	76,504	1,738	1,231	3,000	121,515	
1974	3,200	8,646	9,478	13,505	6,383	1,186	61,200	4,686	1,171	3,700	113,305	
1975	1,600	5,580	8,260	10,716	5,200	2,325	48,360	1,110	470	1,070	85,381	
1976	400	10,800	17,584	7,580	2,730	1,950	70,000	847	26	304	106,760	
1977	800	11,020	10,952	5,137	966	1,800	80,000	2,822	443	1,122	127,957	
1978 <sup>2</sup>	800	11,000	11,000	6,000	1,000	2,000	95,000	4,000	400	1,200	144,072	
1979 <sup>2</sup>	800	12,000	12,000	7,000	1,000	1,800	100,000	3,000	400	1,100	190,000	
PRICE												
Pesos Per Kilogram												
1973	1.00	0.60	0.77	1.15	1.00	0.40	2.70	0.72	1.28	1.06	2.03	
1974	1.50	0.84	0.79	1.31	0.60	1.50	2.50	0.90	1.32	1.06	1.81	
1975	1.50	1.50	1.06	1.23	0.70	1.60	3.00	0.90	1.32	1.10	2.21	
1976	1.50	1.00	1.18	1.63	0.85	1.80	6.00	0.90	1.60	2.00	3.81	
1977	2.00	1.17	1.73	1.81	0.71	1.80	7.03	3.35	1.42	2.00	5.05	
1978 <sup>2</sup>	2.00	1.20	1.75	1.80	0.70	1.80	7.00	3.30	1.50	2.50	5.91	
1979 <sup>2</sup>	2.00	1.50	2.00	2.00	1.00	2.00	8.00	4.00	1.60	3.00	6.18	

<sup>1</sup> Includes other States.<sup>2</sup> Preliminary.

Source: Dirección General de Economía Agrícola, Secretaría de Agricultura y Recursos Hidráulicos (DGEA, SARH), and Unión Nacional de Productores de Hortalizas (UNPH).

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Commodity Programs, FAS, USDA

Table 18.—Squash: Mexico's Area, Yield, Production, and Grower Prices, by States, 1974-79

Year	State										Total Mexico <sup>1</sup>
	Guerrero	Hidalgo	Jalisco	Michoacan	Morelos	Nayarit	San Luis Potosi	Sinaloa	Sonora	Tamaulipas	
1974	10	420	45	300	360	58	75	1,545	882	445	4,388
1975	10	430	60	—	639	—	160	1,613	931	357	4,955
1976	400	500	340	80	348	53	115	1,605	866	216	4,969
1977	350	480	150	180	355	50	110	1,467	893	203	4,530
1978 <sup>2</sup>	400	500	200	200	400	50	100	2,000	900	200	4,000
1979 <sup>2</sup>	400	500	200	200	400	50	100	2,200	900	200	4,000
<b>AREA</b>											
<b>YIELDS</b>											
	Tons per hectare										
1974	8.35	7.00	12.00	7.33	8.21	18.00	18.00	10.50	13.34	3.11	9.860
1975	8.50	7.03	12.00	—	8.00	—	15.00	9.50	13.30	2.96	9.684
1976	15.00	6.50	14.00	0.90	9.31	18.00	15.00	10.50	13.50	3.85	11.042
1977	15.00	6.50	14.00	8.90	9.31	18.00	15.00	14.13	13.50	3.85	13.760
1978 <sup>2</sup>	15.00	7.00	15.00	10.00	10.00	18.00	15.00	20.00	15.00	5.00	16.737
1979 <sup>2</sup>	15.00	7.00	15.00	10.00	10.00	18.00	15.00	20.00	15.00	5.00	17.975
<b>PRODUCTION</b>											
	Tons										
1974	84	2,490	540	2,200	2,955	1,044	1,350	16,223	11,762	1,386	43,266
1975	85	3,023	720	—	5,112	—	2,400	15,324	12,382	1,055	47,986
1976	6,000	3,250	4,760	72	3,240	954	1,725	16,852	11,691	831	54,868
1977	5,250	3,120	2,100	1,600	3,305	900	1,650	20,733	12,055	781	62,333
1978 <sup>2</sup>	6,000	3,500	3,000	2,000	4,000	900	1,500	40,000	13,500	1,000	66,946
1979 <sup>2</sup>	6,000	3,500	3,000	2,000	4,000	900	1,500	44,000	13,500	1,000	71,900
<b>GROWER PRICES</b>											
	Pesos per kilograms										
1974	0.85	2.50	1.60	0.94	2.20	1.00	1.00	2.50	1.00	1.81	1.81
1975	0.95	2.00	1.75	—	1.00	—	1.50	5.00	1.40	1.39	2.48
1976	1.00	1.50	1.66	1.00	2.50	0.70	1.50	6.00	1.40	1.52	2.85
1977	1.50	2.00	1.75	1.28	2.70	0.90	1.70	6.20	1.45	1.60	3.35
1978 <sup>2</sup>	2.00	2.50	2.00	1.50	3.00	1.00	1.70	6.00	2.00	2.00	2.50
1979 <sup>2</sup>	2.50	3.00	2.50	2.00	3.50	1.50	2.00	7.00	2.50	2.50	3.00

— Not available, or unknown.

<sup>1</sup> Includes other states. <sup>2</sup> Preliminary.

SOURCE: Dirección General de Economía Agrícola, Secretaría de Agricultura y Recursos Hidráulicos (DGEA, SARH), and Unión Nacional de Productores de Hortalizas (UNPH).

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Commodity Programs, FAS, USDA

Table 19.—Eggplant: Mexico's Area, Yield, Production, Price, Value, and Exports, 1960-79

Year	Area		Yield		Production		Price	
	Sinaloa	Total Mexico	Sinaloa	Average Mexico	Sinaloa	Total Mexico	Sinaloa	Total Mexico
	<i>Hectares</i>		<i>MT/hectares</i>		<i>MT</i>		<i>Pesos/Kg</i>	
1960 .....	40	148	9.0	8.6	360	1,270	1.00	0.92
1961 .....	40	383	9.5	8.4	380	3,215	1.00	0.97
1962 .....	41	392	9.6	8.4	392	3,277	1.15	1.69
1963 .....	100	442	9.6	8.3	960	3,663	1.25	1.27
1964 .....	40	467	8.1	8.4	325	3,903	1.16	1.28
1965 .....	132	545	9.7	8.4	1,276	4,556	1.29	1.29
1966 .....	144	584	9.6	8.4	1,389	4,877	1.30	1.32
1967 .....	168	652	9.5	8.4	1,602	5,495	1.28	1.32
1968 .....	293	906	10.1	8.7	2,950	7,899	1.30	1.32
1969 .....	545	1,027	22.9	15.6	12,463	16,032	1.35	1.35
1970 .....	596	1,040	23.2	16.4	13,805	17,100	1.30	1.30
1971 .....	585	684	23.5	21.3	13,748	14,551	1.50	1.49
1972 .....	999	1,065	19.8	19.1	19,776	20,330	2.98	2.97
1973 .....	1,219	1,335	19.1	18.6	23,299	24,834	2.90	2.84
1974 .....	1,100	1,165	20.0	19.4	22,000	22,625	2.80	2.77
1975 .....	606	990	20.0	19.5	12,120	19,305	3.85	3.84
1976 .....	669	698	22.9	22.4	15,321	15,616	4.70	4.66
1977 .....	419	443	32.6	31.3	13,644	13,854	6.50	6.46
1978 <sup>1</sup> .....	800	1,088	26.2	21.4	21,000	23,306	7.25	7.22
1979 <sup>1</sup> .....	1,000	1,200	25.0	22.5	25,000	27,000	7.50	7.35

<sup>1</sup> Preliminary.

SOURCE: Unión Nacional de Productores de Hortalizas (UNPH), and Dirección General de Economía Agrícola (DGEA), Secretaría de Agricultura (SARH).

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Commodity Programs, FAS, USDA

Table 20.—Winter Vegetables: Sinaloa's Area, Yield, and Production for Export, 1969/70-1978/79

AREA:	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78 <sup>1</sup>	1978/79 <sup>2</sup>
Cucumbers .....	3,289	4,810	6,661	5,614	4,898	2,195	2,910	3,307	3,632	3,500
Eggplant .....	—	635	948	831	917	522	591	423	532	500
Peppers, Sweet Bell .....	3,081	4,979	5,397	4,869	3,743	1,676	2,629	2,248	3,671	3,500
Squash .....	—	—	2,049	1,588	1,545	1,968	1,651	1,527	1,946	2,000
Tomatoes <sup>3</sup> .....	15,615	13,845	19,287	21,960	16,457	14,009	13,977	16,628	15,300	15,000
<b>YIELD.</b>										
Cucumbers .....	11.25	11.65	7.69	11.08	12.61	17.12	23.13	23.20	25.76	25.71
Eggplant .....	—	14.27	13.09	21.54	16.14	23.08	24.35	33.87	32.99	34.00
Peppers, Sweet Bell .....	8.39	6.52	4.30	7.22	10.39	13.32	11.36	17.74	13.92	14.29
Squash .....	—	—	5.58	6.54	9.43	6.73	9.32	12.09	10.71	10.00
Tomatoes <sup>3</sup> .....	17.21	17.31	12.48	14.15	15.49	16.71	21.42	20.85	22.95	20.00
<b>PRODUCTION:</b>										
Cucumbers .....	11,254	56,026	51,223	62,203	61,764	37,518	67,308	76,722	93,564	90,000
Eggplant .....	—	9,061	12,409	17,902	14,799	12,048	14,394	14,327	17,550	17,000
Peppers, Sweet Bell .....	25,854	32,495	23,186	35,138	38,889	22,319	29,847	39,875	51,093	50,000
Squash .....	—	—	11,434	10,390	14,564	13,249	15,380	18,469	21,042	20,000
Tomatoes <sup>3</sup> .....	268,717	239,645	240,618	310,701	254,862	234,092	299,380	346,746	351,195	300,000

Note: This does not include production for the domestic market, which generally takes 10 to 40 percent of the total output.

— Denotes not available.

<sup>1</sup> Preliminary.

<sup>2</sup> Estimate.

<sup>3</sup> Includes stalked, ground grown, cherry, roma, tomatillo and other varieties.

Source: Confederación de Asociaciones Agrícolas del Estado de Sinaloa (CAADES).

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Table 21.--Winter Vegetables: Sinaloa's Area Grown for Export by River Valley's 1974/75-1978/79  
(In hectares)

	1974/75	1975/76	1976/77	1977/78	1978/79 <sup>1</sup>
<b><u>CULIACÁN</u></b>					
Tomatoes . . . . .	7,726	6,933	8,318	8,553	8,400
Peppers, Bell . . . . .	902	1,172	1,254	1,848	1,700
Cucumbers . . . . .	1,826	2,261	2,567	2,588	2,400
Eggplant . . . . .	522	591	419	484	460
Squash . . . . .	466	291	277	347	350
<b><u>GUASAVE</u></b>					
Tomatoes . . . . .	4,735	4,962	6,667	4,620	4,500
Peppers, Bell . . . . .	356	542	280	795	700
Cucumbers . . . . .	30	200	211	422	400
Eggplant . . . . .	2	—	4	18	15
Squash . . . . .	358	493	239	390	400
<b><u>LOS MOCHIS</u></b>					
Tomatoes . . . . .	1,548	2,081	1,504	2,019	2,000
Peppers, Bell . . . . .	348	815	469	648	600
Cucumbers . . . . .	185	124	103	174	170
Eggplant . . . . .	9	4	—	19	15
Squash . . . . .	998	774	847	639	650
<b><u>SAN LORENZO</u></b>					
Tomatoes . . . . .	—	1	81	49	50
Peppers, Bell . . . . .	33	49	122	195	190
Cucumbers . . . . .	94	225	215	242	240
Squash . . . . .	—	7	50	63	60
<b><u>MOROCRITO</u></b>					
Tomatoes . . . . .	—	—	5	59	50
Peppers, Bell . . . . .	37	50	70	99	100
Cucumbers . . . . .	—	—	—	12	10
Squash . . . . .	138	47	140	507	500
<b><u>ELOTA and BACUARTE</u></b>					
Tomatoes . . . . .	—	—	53	—	—
Peppers, Bell . . . . .	—	1	53	86	80
Cucumbers . . . . .	8	100	211	194	190
<b><u>TOTAL SINALOA</u></b>					
Tomatoes . . . . .	14,009	13,977	16,628	15,300	15,000
Peppers, Bell . . . . .	1,676	2,629	2,248	3,671	3,500
Cucumbers . . . . .	2,195	2,910	3,307	3,632	3,500
Eggplant . . . . .	553	595	423	532	500
Squash . . . . .	1,968	1,651	1,563	1,946	2,000

— Denotes not available.

<sup>1</sup> Estimates.

Source: Confederación de Asociaciones Agrícolas del Estado de Sinaloa.

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Table 22.—Tomatoes: Sinaloa's Production for the Local and Export Markets, 1969/70-1978/79

AREA	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79 <sup>1</sup>
<u>AREA</u>										
Total.....	15,615	13,845	19,287	21,960	16,457	14,009	13,977	16,628	15,300	15,000
<u>YIELDS</u>										
Total.....	23.12	24.28	17.65	20.33	22.64	25.59	32.54	28.44	34.69	30.00
Export .....	17.21	17.31	12.48	14.15	15.49	16.71	21.42	20.85	22.95	20.00
Domestic .....	5.91	6.97	5.17	6.18	7.15	8.88	11.12	7.59	11.73	10.00
<u>PRODUCTION</u>										
Total.....	361,017	336,145	340,377	446,388	372,602	358,438	454,816	472,953	530,732	450,000
Export .....	268,717	239,645	240,618	310,701	254,862	234,092	299,380	346,746	351,195	300,000
Domestic.....	92,300	96,500	99,759	135,687	117,740	124,346	155,436	126,207	179,537	150,000
<sup>1</sup> Estimate.										

Source: Confederación de Asociaciones Agrícolas del Estado de Sinaloa.

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Table 23.—Tomatoes: Sinaloa's Production by Type, 1969/70-1978/79

Crop-Year (Oct-Sept)	Staked tomatoes (Vine-ripen)			Ground grown (Mature greens)			Cherry-type			All tomatoes <sup>1</sup>		
	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production	Area	Yield	Production
1969/70.....	hectares 11,976	tons/ha 19.26	tons 230,689	hectares 2,382	tons/ha 6.79	tons 16,169	hectares 1,257	tons/ha 17.39	tons 21,859	hectares 15,615	tons/ha 17.21	tons 268,717
1970/71.....	9,914	20.39	202,174	3,096	5.08	15,742	835	26.02	21,729	13,845	17.31	239,645
1971/72.....	14,411	13.73	197,834	3,865	5.21	20,144	1,011	22.39	22,640	19,287	12.48	240,618
1972/73.....	14,201	18.27	259,396	6,544	3.52	23,039	1,214	21.64	26,266	21,960	14.15	310,701
1973/74.....	11,401	17.66	201,286	3,296	5.31	17,490	1,655	20.45	33,853	16,457	15.49	254,862
1974/75.....	9,195	20.19	185,657	3,689	5.81	21,438	1,008	24.60	24,799	14,009	16.71	234,092
1975/76.....	9,225	27.48	253,526	3,753	5.18	19,422	877	25.77	22,596	13,977	21.42	299,380
1976/77.....	11,175	25.87	289,082	4,103	6.91	28,357	1,098	20.85	22,889	16,628	20.85	346,746
1977/78 <sup>2</sup> .....	10,305	28.36	292,201	3,294	7.63	25,144	1,407	18.62	26,195	15,300	22.95	351,195
1978/79 <sup>3</sup> .....	10,000	25.00	250,000	3,000	6.67	20,000	1,500	16.67	25,000	15,000	20.00	300,000

Note: This does not include production for the domestic market, which generally takes 30 to 40 percent of the total output.

<sup>1</sup> Includes Roma, Tomatillo and other varieties.

<sup>2</sup> Preliminary.

<sup>3</sup> Estimates.

Source: Confederación de Asociaciones Agrícolas del Estado de Sinaloa (CAADES)

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Commodity Programs, FAS, USDA

Table 24.—Tomatoes: Sinaloa's Area by Type and River Valley,  
1974/75-1978/79  
(In hectares)

	1974/75	1975/76	1976/77	1977/78	1978/79 <sup>1</sup>
<u>Culiacán</u>					
Staked . . . . .	6,998	6,359	7,563	7,613	7,300
Ground . . . . .	252	200	193	320	300
Cherry . . . . .	371	280	404	487	500
Roma . . . . .	105	93	156	133	150
Tomatillo . . . . .	—	1	2	—	—
Total . . . . .	7,726	6,933	8,318	8,553	8,250
<u>Guasave</u>					
Staked . . . . .	1,453	2,177	2,869	2,020	2,000
Ground . . . . .	2,771	2,298	3,243	1,884	1,700
Cherry . . . . .	508	487	499	699	700
Roma . . . . .	3	—	55	17	25
Tomatillo . . . . .	—	—	1	—	—
Total . . . . .	4,735	4,962	6,667	4,620	3,425
<u>Los Mochis</u>					
Staked . . . . .	744	688	673	630	600
Ground . . . . .	666	1,255	647	1,090	1,000
Cherry . . . . .	129	110	151	189	200
Roma . . . . .	3	10	17	85	100
Tomatillo . . . . .	6	18	16	25	25
Total . . . . .	1,548	2,081	1,504	2,019	1,925
<u>San Lorenzo</u>					
Staked . . . . .	—	1	55	42	40
Cherry . . . . .	—	—	26	7	10
Total . . . . .	—	1	81	49	50
<u>Mocorito</u>					
Cherry . . . . .	—	—	—	25	25
Roma . . . . .	—	—	5	34	30
Total . . . . .	—	—	5	59	55
<u>Total Sinaloa</u>					
Staked . . . . .	9,195	9,225	11,175	10,305	10,000
Ground . . . . .	3,689	3,753	4,103	3,294	3,000
Cherry . . . . .	1,008	877	1,098	1,407	1,500
Roma . . . . .	111	103	223	269	275
Tomatillo . . . . .	6	19	19	25	25
Total . . . . .	14,009	13,977	16,628	15,300	15,000

Note: Totals may not add because of insufficient data (particularly in 1978/79).

— Denotes not available or insignificant

<sup>1</sup> Estimate

Source: Confederación de Asociaciones Agrícolas del Estado de Sinaloa.

May 1980

Commodity Programs, FAS, USDA

Table 25.—Tomatoes, Fresh: U.S. Imports from Mexico, 1969/70-1979/80  
(Metric tons)

Season	October	November	December	January	February	March	April	May	June	July	August	September	Total
1969/70 . . . . .	679	2,561	8,488	35,265	47,568	55,460	68,799	44,665	17,327	1,619	1,076	818	284,325
1970/71 . . . . .	904	3,386	13,874	26,550	54,657	39,841	54,826	49,193	16,088	1,941	1,033	920	263,213
1971/72 . . . . .	1,437	3,704	8,489	17,871	70,116	35,941	57,295	50,798	13,167	550	1,371	1,065	261,804
1972/73 . . . . .	2,358	7,353	6,238	26,959	59,468	50,146	88,630	52,246	37,011	4,075	2,455	1,056	337,995
1973/74 . . . . .	2,181	7,943	7,629	37,976	61,675	38,418	40,934	52,019	18,256	3,150	1,139	495	271,815
1974/75 . . . . .	2,024	7,163	4,645	10,700	37,794	38,846	44,628	56,607	36,176	10,773	1,557	1,987	252,900
1975/76 . . . . .	3,025	4,357	7,155	25,517	64,451	41,978	53,526	2,121	66,849	8,608	1,433	1,234	280,254
1976/77 . . . . .	5,929	11,804	10,746	24,385	76,214	53,577	79,631	58,882	23,618	4,016	3,244	2,538	354,584
1977/78 . . . . .	10,687	9,639	9,819	56,772	65,124	76,279	64,811	54,314	16,751	2,970	5,549	4,857	377,572
1978/79 . . . . .	6,753	4,177	10,924	26,015	72,294	58,671	65,083	49,010	14,580	4,468	10,232	1,341	323,548
1979/80 . . . . .	3,656	6,995	9,825	34,605	62,917	-	-	-	-	-	-	-	-

—Denotes not available, unknown, or not applicable.

Source: Bureau of Census, Department of Commerce.

April 1980

Commodity Programs, FAS, USDA

Table 26.—Peppers, Fresh: U.S. Imports from Mexico, 1969/70-1979/80  
(Metric tons)

Season	October	November	December	January	February	March	April	May	June	July	August	September	Total
1969/70 . . . . .	65	91	937	3,662	6,011	7,828	4,974	2,465	628	124	136	178	27,099
1970/71 . . . . .	80	335	2,584	5,486	11,243	6,996	4,809	1,475	1,094	211	142	98	34,553
1971/72 . . . . .	85	343	1,727	3,801	10,293	6,031	3,356	1,636	677	208	111	69	28,337
1972/73 . . . . .	111	228	1,126	4,579	10,775	9,004	7,345	3,129	1,221	352	275	238	38,383
1973/74 . . . . .	311	421	2,430	9,441	12,410	7,061	4,673	2,237	760	525	289	167	40,725
1974/75 . . . . .	149	333	1,192	3,396	5,876	5,813	4,151	2,801	1,205	614	349	463	26,342
1975/76 . . . . .	425	558	2,653	7,008	11,563	8,771	4,719	1,726	1,762	535	499	338	40,557
1976/77 . . . . .	308	454	2,423	6,307	14,085	12,373	7,138	3,891	1,361	712	633	579	50,264
1977/78 . . . . .	419	602	3,099	14,158	14,125	13,476	9,170	2,910	1,222	727	899	843	61,650
1978/79 . . . . .	793	895	6,381	9,582	14,858	11,382	10,864	3,888	1,509	1,170	831	517	62,670
1979/80 . . . . .	791	650	5,337	14,185	17,580	—	—	—	—	—	—	—	—

—Denotes not available, unknown, or not applicable.

Source: Bureau of Census, Department of Commerce.

April 1980

Commodity Programs, FAS, USDA

Table 27.—Cucumbers, Fresh: U.S. Imports from Mexico, 1969/70-1979/80  
(Metric tons)

Season	October	November	December	January	February	March	April	May	June	July	August	September	Total
1969/70 . . . . .	6	279	8,119	8,535	10,642	12,641	9,102	1,193	42	2	—	—	50,561
1970/71 . . . . .	—	101	13,153	14,266	20,837	9,686	10,288	2,323	155	2	—	—	70,811
1971/72 . . . . .	—	227	7,057	14,552	21,656	12,132	8,543	1,039	41	—	—	—	65,247
1972/73 . . . . .	35	576	11,309	16,728	16,040	11,181	18,555	3,149	1,161	203	25	29	78,991
1973/74 . . . . .	203	535	7,707	22,971	24,720	10,354	9,625	2,017	344	17	58	43	78,594
1974/75 . . . . .	414	1,107	4,472	10,736	17,006	6,403	6,386	5,257	1,007	513	—	—	53,301
1975/76 . . . . .	426	541	7,207	20,888	27,517	17,004	9,572	765	1,817	88	—	—	85,825
1976/77 . . . . .	—	1,278	10,075	21,354	31,622	15,629	14,868	3,132	506	217	20	—	98,701
1977/78 . . . . .	10	2,410	17,351	37,539	27,843	18,867	16,855	3,182	670	239	5	13	124,984
1978/79 . . . . .	132	2,328	21,551	20,893	32,811	29,930	22,629	2,304	400	69	12	5	133,064
1979/80 . . . . .	137	4,240	21,260	32,233	42,221	—	—	—	—	—	—	—	—

—Denotes not available, unknown, or not applicable.

Source: Bureau of Census, Department of Commerce.

April 1980

Commodity Programs, FAS, USDA

Table 28.—Squash, Fresh: U.S. Imports from Mexico, 1969/70-1979/80  
(Metric tons)

Season	October	November	December	January	February	March	April	May	June	July	August	September	Total
1969/70.....	—	39	911	2,291	2,881	3,065	1,339	831	234	6	—	—	11,597
1970/71.....	—	—	1,169	2,076	4,446	2,869	1,830	652	63	18	—	—	13,123
1971/72.....	4	14	1,177	3,197	6,537	3,436	1,048	333	82	21	21	32	15,902
1972/73.....	9	36	1,948	3,830	4,336	3,086	3,168	907	309	—	—	12	17,641
1973/74.....	65	133	1,707	5,234	5,767	3,588	1,871	1,143	133	9	—	7	19,657
1974/75.....	91	85	1,088	2,996	4,760	4,650	1,900	814	196	6	15	6	16,607
1975/76.....	125	42	1,143	4,772	7,478	4,898	1,867	571	502	37	—	—	21,435
1976/77.....	17	191	2,815	4,897	7,530	7,000	3,602	1,774	657	30	14	—	28,527
1977/78.....	244	323	4,258	9,943	7,527	6,325	2,732	2,289	102	59	8	6	33,816
1978/79.....	64	904	7,038	6,251	10,606	9,890	5,854	2,201	444	58	18	8	43,336
1979/80.....	486	1,053	5,517	8,854	9,792	—	—	—	—	—	—	—	—

—Denotes not available, unknown, or not applicable.

Source: Bureau of Census, Department of Commerce.

April 1980

Commodity Programs, FAS, USDA



Table 29.--Eggplant, Fresh: U.S. Imports from Mexico, 1969/70-1979/80  
(Metric tons)

Season	October	November	December	January	February	March	April	May	June	July	August	September	Total
1969/70 .....	2	22	1,271	1,661	2,006	2,487	1,637	606	108	-	-	-	9,800
1970/71 .....	-	28	1,258	1,675	3,076	1,833	1,060	825	521	-	3	-	10,279
1971/72 .....	-	164	1,347	2,388	2,821	2,025	1,168	1,437	361	1	-	-	11,712
1972/73 .....	10	815	2,041	3,341	3,018	2,298	3,610	1,707	950	84	2	-	17,876
1973/74 .....	1	554	2,197	3,000	3,185	1,767	914	1,430	338	14	-	-	13,400
1974/75 .....	-	67	1,169	1,839	2,079	1,697	1,540	1,749	476	133	-	-	10,749
1975/76 .....	-	334	1,857	2,221	3,110	3,444	1,064	26	1,651	170	-	-	13,877
1976/77 .....	-	384	1,409	1,956	3,368	3,606	1,772	1,148	671	9	-	-	14,323
1977/78 .....	-	100	1,827	4,385	2,995	3,077	2,948	1,929	575	138	1	-	17,975
1978/79 .....	-	472	2,422	2,200	3,774	2,635	2,764	1,996	941	-	-	-	17,204
1979/80 .....	62	1,026	2,612	2,900	3,858	-	-	-	-	-	-	-	-

-Denotes not available, unknown, or not applicable.

Source: Bureau of Census, Department of Commerce.

April 1980

Commodity Programs, FAS, USDA

Table 30.—Vegetables, Fresh, Chilled or Frozen: U.S. Imports (for consumption) from Mexico, 1965-79

Year	Asparagus (fresh)	Green beans	Brussel sprouts	Cabbage	Carrots	Cucumbers	Eggplant	Garlic	Okra
<b>QUANTITY</b>									
1965	(1)				1,518	39,370	4,426	6,968	110
1966	(1)	8,255	(1)	38	4,170	48,076	5,686	6,248	31
1967	(1)	6,112	(1)	416	2,653	58,412	7,186	9,160	798
1968	(1)	7,162	(1)		16,767	59,876	10,432	7,997	4,229
1969	(1)	7,841	(1)	79	1,288	109,953	17,769	9,361	2,788
1970	(1)	10,980	(1)	23	2,583	122,160	21,585	8,424	5,459
1971	(1)	12,176	(1)	108	2,660	142,948	23,153	6,790	4,200
1972	(1)	11,979	(1)	581	10,413	154,064	28,806	6,861	5,203
1973	(1)	17,668	(1)	121	5,929	166,484	39,156	10,584	6,625
1974	7,284	14,720	(1)	160	9,563	167,864	26,201	15,502	7,665
1975	9,109	14,693	(1)	371	7,893	122,316	25,806	16,125	5,855
1976	8,485	10,222	(1)	189	4,999	196,218	29,719	11,290	9,565
1977	8,244	11,975	(1)	24,668	18,533	236,134	31,871	13,227	16,170
1978	7,091	16,928	3,998	4,809	8,566	284,884	41,759	23,444	20,957
1979	5,006	24,786	4,478	11,898	7,963	296,941	39,702	34,256	23,802
1979	6,693	23,904	4,848						
<b>VALUE</b>									
1965	(1)				1,000 Dollars				
1966	(1)	1,019	(1)	1	10	2,843	388	962	7
1967	(1)	951	(1)	10	35	3,638	481	912	2
1968	(1)	1,040	(1)		41	4,518	565	1,538	49
1969	(1)	1,180	(1)	3	356	4,595	982	1,743	238
1970	(1)	1,475	(1)		19	10,891	2,008	1,514	133
1971	(1)	1,669	(1)	2	33	10,566	2,520	1,390	304
1972	(1)	1,583	(1)	26	44	12,116	2,581	1,239	289
1973	(1)	2,301	(1)	4	208	13,150	3,319	1,754	479
1974	1,454	2,063	(1)	2	311	14,468	4,176	2,596	534
1975	1,788	1,638	(1)	10	385	8,059	1,332	3,474	639
1976	2,496	1,095	(1)	36	344	5,869	1,306	4,075	355
1977	2,490	1,232	(1)	32	267	11,487	1,594	3,511	581
1978	2,878	3,194	688	984	727	17,893	3,278	3,926	927
1979	2,546	7,929	755	241	494	42,405	7,537	6,425	1,361
1979	3,817	7,848	830	835	408	42,785	6,912	9,724	1,510

— Denotes not available, unknown, or not applicable.  
1 Not separately classified.

continued —

Table 30.—Vegetables, Fresh, Chilled or Frozen: U.S. Imports (for consumption) from Mexico Annually, 1965-79—Continued

Year	Onions	Peas	Peppers	Radishes	Squash	Tomatoes	Other	TOTAL
<b>QUANTITY</b>								
1965.....	39,312	4,702	17,672	—	5,525	265,459	4,423	397,778
1966.....	50,530	5,767	24,591	—	5,057	358,743	8,986	524,413
1967.....	41,407	4,848	27,799	374	11,129	362,354	9,504	542,786
1968.....	70,465	3,973	24,429	683	9,476	387,401	16,147	619,795
1969.....	51,248	6,164	40,662	1,612	18,944	446,240	23,770	740,802
1970.....	61,809	5,766	63,946	3,992	26,049	641,015	25,621	1,000,693
1971.....	41,110	5,316	74,319	2,226	28,988	570,287	30,235	944,792
1972.....	57,305	5,257	60,948	1,496	36,814	582,284	35,140	1,002,365
1973.....	124,129	6,434	88,363	2,128	38,700	749,121	31,784	1,291,562
1974.....	90,347	7,656	86,583	3,558	41,925	590,601	36,754	1,108,181
1975.....	75,037	4,668	62,397	4,036	36,711	559,095	35,978	974,995
1976.....	74,414	6,908	88,416	4,644	51,032	648,584	39,545	1,185,742
1977.....	97,450	6,788	112,873	2,858	66,863	785,386	43,347	1,484,205
1978.....	118,733	6,675	144,617	4,600	81,561	814,116	18,872	1,607,863
1979.....	143,081	6,423	135,319	7,352	93,439	710,250	32,625	1,578,496
<b>VALUE</b>								
1965.....	2,158	642	2,024	—	414	29,425	366	40,259
1966.....	3,097	783	3,702	—	546	52,015	637	66,809
1967.....	2,776	778	4,293	23	1,149	42,607	585	59,962
1968.....	4,597	533	4,068	41	1,451	46,973	1,229	67,989
1969.....	3,471	746	7,671	83	2,512	68,018	2,048	100,589
1970.....	5,587	1,086	12,222	161	3,387	94,967	2,967	136,861
1971.....	3,444	1,013	13,553	130	3,620	84,131	3,810	127,579
1972.....	4,875	1,002	10,881	111	4,981	88,150	4,402	135,617
1973.....	9,065	1,300	16,132	184	4,838	115,138	3,834	176,095
1974.....	7,077	1,086	9,124	337	2,130	64,071	5,378	106,528
1975.....	6,846	806	7,928	404	1,893	64,132	5,776	103,361
1976.....	6,403	981	10,485	433	3,006	72,429	7,163	122,094
1977.....	11,932	871	21,450	363	6,049	149,406	7,664	232,230
1978.....	13,400	988	32,530	629	17,561	161,097	2,329	298,227
1979.....	17,689	1,868	35,837	897	17,748	153,184	5,175	307,067

Source: U.S. Bureau of Census, Department of Commerce.

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Table 31.- Vegetable Preparations: U.S. Imports (for consumption) from Mexico, 1965-79

Year	Canned asparagus	Canned tomatoes	Tomato paste & sauce	Dehydrated vegetables	Pickled vegetables NES	Other	TOTAL
<i>1,000 Pounds</i>							
<b>QUANTITY</b>							
1965.....	(1)	1	1,899	5,243	10,741	345	18,229
1966.....	(1)	1	7,080	1,554	6,882	1,719	17,236
1967.....	(1)	1,143	10,015	187	13,344	1,556	26,245
1968.....	(1)	4	410	6	12,178	1,768	14,366
1969.....	(1)	445	6,310	17	15,146	1,291	23,209
1970.....	156	1,226	9,015	9	18,276	1,310	29,992
1971.....	1,941	1,164	9,030	4	22,576	2,137	36,852
1972.....	4,011	540	4,724	8	29,757	3,313	42,353
1973.....	3,282	5,650	4,938	42	31,971	3,121	49,004
1974.....	4,546	3,970	4,931	163	36,686	7,530	57,826
1975.....	5,582	3,588	3,103	188	25,792	6,329	44,582
1976.....	2,719	278	13,389	299	33,377	7,645	57,707
1977.....	2,315	672	24,338	270	35,885	9,230	72,710
1978.....	1,768	575	28,162	575	46,252	15,724	93,056
1979.....	1,861	739	22,775	553	50,859	19,164	95,951
<i>1,000 Dollars</i>							
<b>VALUE</b>							
1965.....	(1)	—	180	584	675	92	1,531
1966.....	(1)	—	966	300	705	268	2,239
1967.....	(1)	68	1,432	82	1,103	236	2,921
1968.....	(1)	1	73	7	1,429	461	1,971
1969.....	(1)	31	1,206	15	1,582	431	3,265
1970.....	39	99	1,360	13	2,078	363	3,952
1971.....	612	138	1,256	3	2,298	653	4,960
1972.....	1,173	178	670	7	2,898	971	5,897
1973.....	1,102	515	817	13	3,568	919	6,934
1974.....	1,739	458	2,200	290	5,159	1,881	11,727
1975.....	2,428	537	804	405	5,324	2,589	12,087
1976.....	961	54	3,287	585	7,064	2,817	14,768
1977.....	1,099	116	7,172	456	7,088	3,665	19,596
1978.....	1,145	115	7,652	1,475	8,749	6,297	25,433
1979.....	1,342	206	6,306	1,457	12,110	8,089	29,510

— Denotes not available, unknown, or not applicable.

<sup>1</sup> Not separately classified.

Source: U.S. Bureau of Census, Department of Commerce.

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Table 32.—Fruits and Vegetables: Value of U.S. Imports (for consumption) from Mexico, 1965-1979  
(In \$1,000)

Year	Fruits and Preparations (Including melons)										Vegetables & Preparations			Total Fruits and Vegs.
	Fresh			Processed				Total	Fresh	Processed	Total <sup>1</sup>			
	Fruits	Melons	Total	Fruit juices	Citrus oil	Other	Total							
1965	6,147	8,958	15,105	744	3,789	12,113	16,646	31,751	40,259	1,531	41,790	73,541		
1966	6,568	7,436	14,004	271	4,018	20,443	24,732	38,736	66,809	2,239	69,048	107,784		
1967	8,503	7,595	16,098	230	5,813	14,572	20,615	36,713	59,962	2,921	62,883	99,596		
1968	13,730	6,367	20,097	659	5,682	16,979	23,320	43,417	67,989	1,971	69,960	113,377		
1969	12,878	9,048	21,926	302	2,322	19,625	22,249	44,175	100,589	3,265	103,854	148,029		
1970	16,119	11,309	27,428	319	3,445	18,835	22,599	50,027	136,861	3,952	140,813	190,840		
1971	15,808	12,222	28,030	647	2,841	16,038	19,526	47,556	127,579	4,960	132,539	180,095		
1972	16,163	12,957	29,120	2,724	4,151	18,175	25,050	54,170	135,617	5,897	141,514	195,684		
1973	18,818	16,095	34,913	3,777	4,440	29,789	38,006	72,919	176,095	6,934	183,029	255,948		
1974	20,240	18,193	38,433	3,446	6,138	33,259	42,843	81,276	106,528	11,727	118,255	199,531		
1975	19,236	20,026	39,262	2,145	5,540	28,915	36,600	75,862	103,361	12,087	115,448	191,310		
1976	21,936	23,526	45,462	983	3,899	24,940	29,822	75,284	122,094	14,768	136,862	212,146		
1977	28,523	30,015	58,538	9,721	7,597	39,541	56,859	115,397	232,230	19,596	251,826	367,223		
1978	36,834	32,578	69,412	12,164	9,476	38,317	59,957	129,369	298,227	25,433	323,660	453,029		
1979	40,295	36,256	76,551	11,508	14,743	49,309	75,560	152,111	307,067	29,510	336,577	488,688		

<sup>1</sup> Excludes dried beans and peas.

Source: U.S. Bureau of Census, Department of Commerce.

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Table 33.—Mexico Truck Imports Through South Texas, Port of Entry, 1975/76-1978-79<sup>1</sup>  
(Pounds)

Commodity	1975/76	1976/77	1977/78	1978/79
Asparagus . . . . .	870,000	930,000	720,000	720,000
Bananas . . . . .	4,720,000	21,200,000	18,480,000	2,544,000
Beans, green . . . . .	810,000	2,940,000	1,590,000	360,000
Broccoli . . . . .	—	161,000	1,495,000	92,000
Cabbage . . . . .	—	25,450,000	3,650,000	7,300,000
Cantaloupes . . . . .	78,920,000	78,920,000	96,440,000	132,840,000
Carrots . . . . .	12,336,000	16,320,000	14,832,000	6,576,000
Cauliflower . . . . .	66,000	22,000	1,892,000	1,562,000
Coconuts . . . . .	2,150,000	1,700,000	920,000	1,360,000
Cucumbers . . . . .	19,085,000	13,475,000	21,065,000	17,820,000
Eggplant . . . . .	—	33,000	—	—
Garlic . . . . .	5,720,000	6,094,000	7,678,000	21,098,000
Honeydews . . . . .	7,800,000	12,960,000	16,020,000	33,540,000
Mangoes . . . . .	2,618,000	2,198,000	3,752,000	8,918,000
Melons, mixed . . . . .	1,860,000	630,000	—	—
Okra . . . . .	12,840,000	11,880,000	17,520,000	17,520,000
Onions, dry . . . . .	77,050,000	103,050,000	112,800,000	98,850,000
Papayas . . . . .	—	10,000	—	—
Parsley . . . . .	—	21,000	—	—
Peas, So . . . . .	832,000	3,094,000	5,798,000	2,990,000
Peppers . . . . .	7,900	12,240,000	6,575,000	5,225,000
Others . . . . .	—	—	—	4,140,000
Pineapples . . . . .	65,640,000	80,200,000	85,240,000	87,960,000
Squash . . . . .	5,334,000	7,938,000	10,374,000	6,342,000
Strawberries . . . . .	13,356,000	19,200,000	23,160,000	29,616,000
Tomatoes . . . . .	11,640,000	53,100,000	28,830,000	5,700,000
Cherry . . . . .	—	—	—	22,920,000
Turnips . . . . .	—	150,000	—	—
Watermelons . . . . .	98,430,000	78,404,000	106,148,000	116,484,000
Grapefruit . . . . .	56,000	11,360,000	5,080,000	4,920,000
Limes . . . . .	7,240,000	10,880,000	19,080,000	19,080,000
Oranges . . . . .	8,643,000	31,261,000	23,994,000	43,946,000
Tangerines . . . . .	39,690,000	66,375,000	38,925,000	43,830,000

— Denotes not available, unknown, or not applicable.

<sup>1</sup> Period covered: September 1-June 30.

Source: Plant Quarantine, Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture.

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Table 34.—Mexico Rail and Truck Imports Through Nogales, Arizona, Port of Entry 1974/75-1978/79<sup>1</sup>  
(Pounds)

Commodities	1974/75	1975/76	1976/77	1977/78	1978/79
Asparagus . . . . .	267,908	—	—	75,463	55,054
Beans, green . . . . .	9,913,294	11,790,141	14,416,447	20,387,615	25,880,459
Brussel sprouts . . . . .	705,542	435,449	—	288,394	80,921
Cucumbers . . . . .	103,580,297	162,609,172	192,206,405	231,613,361	239,509,112
Corn, sweet . . . . .	105,532	75,119	135,045	110,164	72,927
Eggplant . . . . .	27,740,728	38,769,527	33,717,799	40,975,266	39,438,073
Garlic . . . . .	2,037,718	1,087,732	915,420	2,793,610	8,428,350
Grapes, table . . . . .	4,016,074	8,959,684	9,987,512	10,141,407	19,758,299
Limes . . . . .	8,544	—	39,877	66,217	43,398
Mangoes . . . . .	2,864,486	2,603,879	3,306,203	8,558,539	10,075,548
Melons, all					
Cantaloupes & mixed types. . . . .	<sup>2</sup> 65,195,963	<sup>2</sup> 56,431,263	<sup>2</sup> 95,326,501	<sup>2</sup> 94,319,956	5,142,818
Onions, dry . . . . .	836,215	584,723	110,785	1,168,030	267,483
Oranges . . . . .	—	—	—	74,866	710,630
Peas, green . . . . .	5,496,089	9,021,095	6,528,131	6,643,196	5,885,490
Peppers					
Calwdr type . . . . .	41,962,187	66,163,300	90,980,342	121,219,691	111,559,217
Other types . . . . .	7,505,294	12,180,313	10,507,466	14,781,378	11,201,576
Combined total . . . . .	49,467,481	78,343,613	101,487,808	136,001,069	122,760,793
Squash . . . . .	38,642,635	45,928,984	58,660,345	70,901,824	86,310,825
Strawberries . . . . .	815,668	403,684	588,804	443,254	667,450
Tomatoes					
Green, breakers & ripers . . . . .	506,412,400	558,784,873	669,267,308	693,774,063	625,721,019
Cherry type . . . . .	58,855,583	56,221,640	63,346,121	75,745,725	49,179,923
Total . . . . .	565,267,983	615,006,513	732,613,429	769,519,788	674,900,942
Watermelons . . . . .	60,164,564	81,543,324	80,905,971	77,362,199	86,215,763

— Denotes not available, unknown, or not applicable.

<sup>1</sup> Period covered: July 1-June 30.

<sup>2</sup> Includes cantaloupes.

Source: Plant Quarantine, Animal and Plant Health Inspection Service (APHIS), U.S. Department of Agriculture (USDA).

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Table 35.—Tomatoes: U.S. Imports by Principal Ports of Entry, 1960-78

Fiscal year <sup>1</sup>	Nogales, Arizona	Calexico, California	San Diego, California <sup>2</sup>	Brownsville, Texas	Hidalgo, Texas	Laredo, Texas	Total <sup>3</sup>
	<i>— Metric Tons —</i>						
1960 .....	91,511	41	2,550	5,744	2,872	10,251	112,969
1961 .....	67,046	239	2,009	7,500	1,078	3,767	81,639
1962 .....	97,443	126	2,573	3,117	959	2,651	106,869
1963 .....	103,414	11	928	4,110	1,238	4,900	114,601
1964 .....	109,989	387	587	2,529	2,076	3,405	118,973
1965 .....	122,114	1,912	967	951	2,218	1,902	130,064
1966 .....	174,907	1,492	1,112	973	802	2,841	182,127
1967 .....	194,375	322	3,205	1,582	1,678	5,585	206,747
1968 .....	178,774	180	3,575	963	1,474	2,486	187,452
1969 .....	235,252	245	2,841	1,328	3,646	6,150	249,462
1970 .....	298,175	100	3,751	3,287	5,791	7,515	318,619
1971 .....	262,858	347	6,172	4,736	6,360	9,079	289,552
1972 .....	259,470	877	7,164	3,167	6,866	10,196	287,740
1973 .....	308,718	532	10,004	2,605	7,304	10,492	339,655
1974 .....	249,203	1,030	12,463	1,247	7,112	8,956	280,011
1975 .....	250,604	353	11,652	147	7,912	5,027	275,695
1976 .....	233,484	880	15,684	95	5,367	2,027	257,537
1977 .....	332,335	1,130	28,815	764	12,698	8,371	384,113
1978 .....	348,966	637	35,184	215	13,308	2,722	401,032

Note: This data may include Transshipments to Canada.

<sup>1</sup> July-June through 1976, October-September year beginning in 1977. <sup>2</sup> Includes entries labeled San Ysidro.

<sup>3</sup> Total does not include all U.S. Ports of Entry.

Source: Foreign Agricultural Trade of the United States (FATUS) Imports under plant quarantine regulations, Plant Protection and Quarantine, Animal and Plant Health Inspection Service, (PPQ-APHIS), USDA.

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Table 36.—U.S. Imports of Fresh Tomatoes from Mexico, 1960/61-1978/79

Season	Quantity (1,000 pounds)					Percentage of total			
	Fall Oct-Dec	Winter Jan-Mar	Spring Apr-Jun	Summer Jul-Sep	Total	Fall Oct-Dec	Winter Jan-Mar	Spring Apr-Jun	Summer Jul-Sep
1960/61 . . . . .	32,988	105,839	40,537	3,097	182,461	18.1	58.0	22.2	1.7
1961/62 . . . . .	6,596	139,498	83,361	642	230,097	2.9	60.6	36.2	0.2
1962/63 . . . . .	9,717	150,856	74,897	446	235,916	4.1	64.0	31.7	0.2
1963/64 . . . . .	13,765	136,847	97,215	1,389	249,216	5.5	54.9	39.0	0.6
1964/65 . . . . .	10,671	139,341	107,471	1,026	258,509	4.1	53.9	41.6	0.3
1965/66 . . . . .	17,622	179,987	140,051	2,398	340,058	5.2	52.9	41.2	0.7
1966/67 . . . . .	36,306	190,801	150,722	8,277	386,106	9.4	49.4	39.0	2.1
1967/68 . . . . .	12,555	186,971	151,984	7,510	359,020	3.5	52.1	42.3	2.1
1968/69 . . . . .	40,936	235,498	179,864	5,020	461,318	8.9	51.0	39.0	1.1
1969/70 . . . . .	25,857	304,881	288,344	7,747	626,829	4.1	48.7	46.0	1.2
1970/71 . . . . .	40,044	266,864	264,789	8,586	580,283	6.9	46.0	45.6	1.5
1971/72 . . . . .	30,049	273,211	267,328	6,582	577,170	5.2	47.3	46.3	1.1
1972/73 . . . . .	35,164	301,088	392,170	16,724	745,146	4.7	40.4	52.6	2.2
1973/74 . . . . .	39,140	304,389	245,172	10,546	599,247	6.5	50.8	40.9	1.8
1974/75 . . . . .	30,494	192,549	302,935	31,563	557,541	5.5	34.5	54.3	5.7
1975/76 . . . . .	32,047	290,890	270,054	24,857	617,848	5.2	47.1	43.7	4.0
1976/77 . . . . .	62,783	339,896	357,435	21,602	781,716	8.0	43.5	45.7	2.8
1977/78 . . . . .	66,458	436,898	299,554	29,487	832,397	8.0	52.5	36.0	3.5
1978/79 . . . . .	48,182	346,078	283,672	35,363	713,295	6.7	48.5	39.8	5.0

Source: Dept. of Commerce, Bureau of Census.

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Commodity Programs, FAS, USDA

Table 37.—Fresh Tomatoes: U.S. shipments and market shares by seasonal groups, California, Florida, and Mexico, November-May, 1974/75-1979/80

Season and year	U.S. shipments <sup>1</sup>					Market shares <sup>2</sup>				
	California	Florida	Mexico	Other <sup>3</sup>	Total	California	Florida	Mexico	Other <sup>3</sup>	Total
-----1,000 cwt.----- Percent-----										
<u>Fall Nov.-Dec.</u>										
1974 .....	759	1,658	260	91	2,768	27.4	59.9	9.4	3.3	100.0
1975 .....	806	1,663	254	102	2,825	28.5	58.9	9.0	3.6	100.0
1976 .....	575	2,179	497	29	3,280	17.5	66.4	15.2	.9	100.0
1977 .....	810	1,935	429	12	3,186	25.4	60.7	13.5	.4	100.0
1978 .....	660	2,573	333	13	3,579	18.4	71.9	9.3	.4	100.0
1979 <sup>4</sup> .....	610	2,482	371	45	3,508	17.4	70.8	10.6	1.2	100.0
<u>Winter: Jan.-March</u>										
1975 .....	22	2,716	1,926	54	4,718	.5	57.6	40.8	1.1	100.0
1976 .....	32	2,435	2,909	30	5,406	.6	45.0	53.8	.6	100.0
1977 .....	51	991	3,399	36	4,477	1.1	22.1	75.9	.9	100.0
1978 .....	7	1,945	4,370	14	6,336	.1	30.7	69.0	.2	100.0
1979 <sup>4</sup> .....	10	2,220	3,461	12	5,703	.2	38.9	60.7	.2	100.0
1980 <sup>4</sup> .....	17	3,268	—	—	—	—	—	—	—	—
<u>Spring: April-May</u>										
1975 .....	13	2,542	2,232	145	4,932	.3	51.5	45.3	2.9	100.0
1976 .....	38	3,143	1,227	131	4,539	.8	69.3	27.0	2.9	100.0
1977 .....	71	2,408	3,054	128	5,661	1.3	42.5	53.9	2.3	100.0
1978 .....	106	2,408	2,626	68	5,208	2.0	46.2	50.4	1.4	100.0
1979 <sup>4</sup> .....	77	3,233	2,515	57	5,882	1.3	55.0	42.7	1.0	100.0
<u>Combined seasons</u>										
1974/75 .....	794	6,916	4,418	290	12,418	6.4	55.7	35.6	2.3	100.0
1975/76 .....	876	7,241	4,390	263	12,770	6.9	56.7	34.4	2.0	100.0
1976/77 .....	697	5,578	6,950	193	13,418	5.2	41.6	51.8	1.4	100.0
1977/78 .....	923	6,288	7,425	94	14,730	6.3	42.7	50.4	.6	100.0
1978/79 <sup>4</sup> .....	727	8,026	6,309	82	15,144	4.8	53.0	41.7	.5	100.0

— Denotes not available, unknown, or not applicable.

<sup>1</sup> Including imports.

<sup>2</sup> Percentage of total U.S. shipments, including imports.

<sup>3</sup> Includes other States and foreign countries.

<sup>4</sup> Preliminary.

Source: Data compiled by Vegetable Branch, F & V Div., AMS from annual reports of the Market News Branch, F & V Div., AMS.

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Commodity Programs, FAS, USDA

Table 38.—Fresh Green Peppers: U.S. Shipments and Market Shares by Seasonal Groups, Florida and Mexico, November-May, 1974/75-1979/80

Season and year	U.S. shipments <sup>1</sup>				Market shares <sup>2</sup>			
	Florida	Mexico	Other <sup>3</sup>	Total	Florida	Mexico	Other <sup>3</sup>	Total
----- 1,000 cwt. ----- Percent -----								
<u>Fall: Nov.-Dec.</u>								
1974 .....	377	29	270	676	55.8	4.3	39.9	100.0
1975 .....	359	35	244	638	56.3	5.5	38.2	100.0
1976 .....	457	54	223	734	62.3	7.4	30.3	100.0
1977 .....	520	69	317	906	57.4	7.6	35.0	100.0
1978 .....	372	161	337	870	42.8	18.5	38.7	100.0
1979 <sup>4</sup> .....	251	132	416	799	31.4	16.5	52.1	100.0
<u>Winter: Jan.-March</u>								
1975 .....	822	283	19	1,124	73.1	25.2	1.7	100.0
1976 .....	633	513	21	1,167	54.2	44.0	1.8	100.0
1977 .....	296	614	34	944	31.4	65.0	3.6	100.0
1978 .....	566	920	44	1,530	37.0	60.1	2.9	100.0
1979 <sup>4</sup> .....	634	790	41	1,465	43.3	53.9	2.8	100.0
1980 <sup>4</sup> .....	508	—	—	—	—	—	—	—
<u>Spring: April-May</u>								
1975 .....	821	130	104	1,055	77.8	12.3	9.9	100.0
1976 .....	799	121	164	1,084	73.7	11.2	15.1	100.0
1977 .....	874	207	86	1,167	74.9	17.7	7.4	100.0
1978 .....	575	266	73	914	62.9	29.1	8.0	100.0
1979 <sup>4</sup> .....	642	325	85	1,052	61.0	30.9	8.1	100.0
<u>Combined seasons</u>								
1974/75 .....	2,020	442	393	2,855	70.8	15.5	13.7	100.0
1975/76 .....	1,791	669	429	2,889	62.0	23.2	14.8	100.0
1976/77 .....	1,627	875	343	2,845	57.2	30.8	12.0	100.0
1977/78 .....	1,661	1,255	434	3,350	49.6	37.5	12.9	100.0
1978/79 <sup>4</sup> .....	1,648	1,276	463	3,387	48.7	37.7	13.6	100.0

— Denotes not available, unknown, or not applicable.

<sup>1</sup> Including imports. <sup>2</sup> Percentage of total U.S. shipments, including imports. <sup>3</sup> Includes other States and foreign countries. <sup>4</sup> Preliminary.

Source: Data compiled by Vegetable Branch, F & V Div., AMS from annual reports of the Market News Branch, F & V Div., AMS

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Commodity Programs, FAS, USDA

Table 39.—Fresh Cucumbers: U.S. Shipments and Market Shares by Seasonal Groups, Florida, Texas, and Mexico, November-May 1974/75-1979/80

Season and year	U.S. shipments <sup>1</sup>					Market shares <sup>2</sup>				
	Florida	Texas	Mexico	Other <sup>3</sup>	Total	Florida	Texas	Mexico	Other <sup>3</sup>	Total
	-----1,000 cwt.-----					-----Percent-----				
<u>Fall: Nov.-Dec.</u>										
1974 .....	637	107	132	18	894	71.3	12.0	14.8	1.9	100.0
1975 .....	511	87	182	29	809	63.2	10.8	22.5	3.5	100.0
1976 .....	507	106	526	33	1,172	43.3	9.0	44.9	2.8	100.0
1977 .....	641	206	466	68	1,381	46.4	14.9	33.7	5.0	100.0
1978 .....	846	146	526	46	1,564	54.1	9.3	33.6	3.0	100.0
1979 <sup>4</sup> .....	516	176	562	44	1,298	39.8	13.6	43.3	3.3	100.0
<u>Winter: Jan.-March</u>										
1975 .....	275	2	805	73	1,155	23.8	.2	69.7	6.3	100.0
1976 .....	243	—	1,542	142	1,927	12.6	—	80.0	7.4	100.0
1977 .....	127	2	1,617	105	1,851	6.9	.1	87.3	5.7	100.0
1978 .....	141	10	1,858	95	2,104	6.7	.5	88.3	4.5	100.0
1979 <sup>4</sup> .....	214	—	1,844	128	2,186	9.8	—	84.4	5.8	100.0
1980 <sup>4</sup> .....	191	—	—	—	—	—	—	—	—	—
<u>Spring: April-May</u>										
1975 .....	955	144	275	77	1,451	65.8	9.9	19.0	5.3	100.0
1976 .....	1,240	127	244	129	1,740	71.3	7.3	14.0	7.4	100.0
1977 .....	1,188	279	425	219	2,111	56.3	13.2	20.1	10.4	100.0
1978 .....	1,054	222	442	96	1,814	58.1	12.2	24.4	5.3	100.0
1979 <sup>4</sup> .....	998	242	550	150	1,940	51.4	12.5	28.4	7.7	100.0
<u>Combined seasons</u>										
1974/75 .....	1,867	253	1,212	168	3,500	53.3	7.2	34.6	4.9	100.0
1975/76 .....	1,994	214	1,968	300	4,476	44.5	4.8	44.0	6.7	100.0
1976/77 .....	1,822	387	2,568	357	5,134	35.5	7.5	50.0	7.0	100.0
1977/78 .....	1,836	438	2,766	259	5,299	34.6	8.3	52.2	4.9	100.0
1978/79 <sup>4</sup> .....	2,058	388	2,920	324	5,690	36.2	6.8	51.3	5.7	100.0

— Denotes not available, unknown, or not applicable.

<sup>1</sup> Including imports. <sup>2</sup> Percentage of total U.S. shipments, including imports. <sup>3</sup> Includes other States and foreign countries. <sup>4</sup> Preliminary.

Source: Data compiled by Vegetable Branch, F & V Div., AMS from annual reports of the Market News Branch, F & V Div., AMS.

April 1980

Commodity Programs, FAS, USDA

Table 40. Fresh Eggplant: Unloads in 41 U.S. cities and market shares by seasonal groups, Florida and Mexico, November-May, 1974/75-1979/80

Season and year	41 U.S. city unloads <sup>1</sup>				Market shares <sup>2</sup>			
	Florida	Mexico	Other <sup>3</sup>	Total	Florida	Mexico	Other <sup>3</sup>	Total
	1,000 cwt.				- Percent -			
Fall: Nov.-Dec.								
1974	81	32	16	129	62.8	24.8	12.4	100.0
1975	91	54	20	165	55.2	32.7	12.1	100.0
1976	87	40	21	148	58.8	27.0	14.2	100.0
1977	103	44	22	169	61.0	26.0	13.0	100.0
1978	84	35	20	139	60.4	25.2	14.4	100.0
1979 <sup>4</sup>	78	50	23	151	51.7	33.1	15.2	100.0
Winter: Jan.-March								
1975	95	125	1	221	42.9	56.6	.5	100.0
1976	75	162	1	238	31.5	68.1	.4	100.0
1977	36	160		196	18.4	81.6	-	100.0
1978	59	175		234	25.2	74.8	-	100.0
1979 <sup>4</sup>	77	146	4	227	33.9	64.3	1.8	100.0
1980 <sup>4</sup>	87	166	3	256	34.0	64.8	1.2	100.0
Spring: April-May								
1975	112	57	1	170	65.9	33.5	.6	100.0
1976	100	59	1	160	62.5	36.9	.6	100.0
1977	85	70	1	156	54.5	44.9	.6	100.0
1978	56	87	4	147	38.1	59.2	2.7	100.0
1979 <sup>4</sup>	59	70	4	133	44.4	52.6	3.0	100.0
Combined seasons								
1974/75	288	214	18	520	55.4	41.1	3.5	100.0
1975/76	266	275	22	563	47.2	48.9	3.9	100.0
1976/77	208	270	22	500	41.6	54.0	4.4	100.0
1977/78	218	306	26	550	39.6	55.7	4.7	100.0
1978/79 <sup>4</sup>	220	251	28	499	44.1	50.3	5.6	100.0
1979/80 <sup>4</sup>	-	-	-	-	-	-	-	-

- Denotes not available, unknown, or not applicable.

<sup>1</sup> Including imports, and foreign countries.

<sup>2</sup> Percentage of total unloads, including imports, in 41 U.S. cities.

<sup>3</sup> Includes other States

<sup>4</sup> Preliminary.

Source: Data compiled by Vegetable Branch, F & V Div., AMS from annual reports of the Market News Branch, F & V Div., AMS.

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Commodity Programs, FAS, USDA

Table 41.—Fresh Squash: Unloads in 41 U.S. cities and market shares by seasonal groups, California, Florida, and Mexico, November-May, 1974/75-1979/80

Season and year	41 U.S. city unloads <sup>1</sup>					Market shares <sup>2</sup>				
	Calif- ornia	Florida	Mexico	Other <sup>3</sup>	Total	Calif- ornia	Florida	Mexico	Other <sup>3</sup>	Total
	-----1,000 cwt.-----					-----Percent-----				
<u>Fall: Nov.-Dec.</u>										
1974 .....	93	119	26	134	372	25.0	32.0	7.0	36.0	100.0
1975 .....	99	105	48	146	398	24.9	26.4	12.1	36.6	100.0
1976 .....	107	132	64	126	429	24.9	30.8	14.9	29.4	100.0
1977 .....	99	124	86	158	467	21.2	26.6	18.4	33.8	100.0
1978 .....	94	148	90	124	456	20.6	32.5	19.7	27.2	100.0
1979 <sup>4</sup> .....	89	114	68	124	395	22.5	28.9	17.2	31.4	100.0
<u>Winter: Jan.-March</u>										
1975 .....	35	172	197	68	472	7.4	36.4	41.7	14.5	100.0
1976 .....	49	136	256	67	508	9.6	26.8	50.4	13.2	100.0
1977 .....	57	98	292	60	507	11.2	19.3	57.6	11.9	100.0
1978 .....	75	90	342	68	575	13.0	15.7	59.5	11.8	100.0
1979 <sup>4</sup> .....	67	154	411	74	706	9.5	21.8	58.2	10.5	100.0
1980 <sup>4</sup> .....	40	176	313	53	582	6.9	30.2	53.8	9.1	100.0
<u>Spring: April-May</u>										
1975 .....	77	164	29	73	343	22.4	47.8	8.5	21.3	100.0
1976 .....	92	180	28	93	393	23.4	45.8	7.1	23.7	100.0
1977 .....	110	192	51	93	446	24.7	43.0	11.4	20.9	100.0
1978 .....	137	175	38	94	444	30.9	39.4	8.6	21.1	100.0
1979 <sup>4</sup> .....	217	173	77	106	573	37.9	30.2	13.4	18.5	100.0
1980 .....										
<u>Combined seasons</u>										
1974/75 .....	205	455	252	275	1,187	17.3	38.3	21.2	23.2	100.0
1975/76 .....	240	421	332	306	1,299	18.5	32.4	25.6	23.5	100.0
1976/77 .....	274	422	407	279	1,382	19.8	30.5	29.5	20.2	100.0
1977/78 .....	311	389	466	320	1,486	20.9	26.2	31.4	21.5	100.0
1978/79 .....	378	475	578	304	1,735	21.8	27.4	33.3	17.5	100.0

<sup>1</sup> Including imports.  
States and foreign countries.

<sup>2</sup> Percentage of total unloads, including imports, in 41 U.S. cities.  
<sup>4</sup> Preliminary.

<sup>3</sup> Includes other

Source: Data compiled by Vegetable Branch, F & V Div., AMS from annual reports of the Market News Branch, F & V Div., AMS.

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